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ADDRESSES AND ORIGINAL ARTICLES

THE SCIENCE OF MEDICINE.

An Address delivered at the Opening of the Banting Research Institute of the University of Toronto

BY LORD MOYNIHAN, K.C.M.G., C.B.,
PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

TO-DAY we open, we consecrate, a new Institute for Medical Research. We commemorate one of the greatest discoveries in the history of Medicine. The occasion seems not inappropriate for inquiry into some of the problems connected with research, and into the methods by which Medicine, in all its branches, has been and may still further be advanced.

Here we may gratefully recall the fact that Medicine is in truth the parent of all sciences, and that intellectual or technical assault upon every branch of human knowledge depends upon principles brought into existence and notably enlarged and advanced by those engaged in the practice and teaching of Medicine. It is true that for a thousand years or more the weapons of attack, lying idle, were allowed to rust; but on the revival of learning Medicine again took the lead, fostered the growth of the natural sciences, and afforded a means of livelihood to those engaged in their pursuit.

That the world in which we live is governed by laws, that man formulates these laws after close observation of phenomena and the brooding of his mind upon them, and that by experiment the validity of these laws may be tested, this whole idea we owe to Greece whose debt, in turn, to Egypt was by no means inconsiderable. Science has been defined as the application of methods of observation, critical judgment, and experiment to the physical world.

The science of the Greeks was from first to last the child of Medicine. To Hippocrates, Father of Medicine, we owe the establishment of the inductive method of logic. By the application of his mind to diseases, their recognition, differentiation, and modes of cure he founded the principle that from a multitude of singular examples a general truth can be raised. The Father of Medicine was also the father of inductive logic.

To Galen, a speculative mind, we owe the deductive method, the method of trial by experiment, the procedure by which specific isolated questions are submitted individually for examination by tests applied for the moment to them alone, all that is extraneous being excluded. The method of Hippocrates deals with facts and phenomena already in existence, discovering them by observation, yet creating nothing. The method of Galen creates facts as it needs them, in illimitable numbers and of endless variety.

Observation and Inference.

The method of observation, the Hippocratic method, is in the development of mental processes necessarily the first to be acquired and applied. It has, however, difficulties and perplexities which become more clearly realised as experience grows. In the first place apperception keen enough to recognise truth free from error, and to range it, for comparison or coördination, alongside other truths, is one of the rarest qualities. Momentary lack of attention, of concentration, of interest; prejudices which come from alien experience, credulity, or personal desire; confusion which follows from comparisons made almost or quite unconsciously, all tend to blur the image or derange the thought of the observer. The simplest of tests will confirm this view.

In making observations, therefore, to act safely we must proceed according to some method. And method implies both appraisement and selection, "picking out" among a multitude of things to be observed. What, then, shall govern selection? Observers will not agree upon the answer. Some will suggest that the fact or phenomenon first to be selected shall be that which occurs oftenest and, therefore, appears simplest because minds are used to it, or that which, they judge, is most important because of its effect, or supposed effect, upon the problem under consideration; or, again, that which to the observer is found to be the most "interesting," for reasons which lie deep in his conscious or subconscious mind. When a complex problem is repeatedly examined, the observer, as Poincaré has pointed out, is at first concerned with resemblances among facts; of these, however, the mind may at last grow weary. It is differences, then, rather than resemblances which hold the attention, and receive undue prominence in continued observation. Our purpose is, however, not so much to discover resemblances and differences, as the similarities under apparent discrepancies, leading at last to fruitful classification.

The making of observations is then by no means a random or simple procedure. It is governed by a number of factors, some of which are an integral part of the problem itself, whereas others are a property of the observing mind. Herein lies one of the difficulties inherent in the Science of Medicine. In other sciences the phenomena presented for observation are pure; in Medicine they are rarely unaffected by their passage through the medium of the patient's mind, which seeks to interpret, or unwittingly interposes a veil of obscurity. The observer is then confronted not with phenomena as they really exist, but with impure phenomena in varying degree, adulterated by the mind or affected by the will or temperament of the patient. And to an extent which varies in different individuals and in the same individual on different occasions the observing mind, too, may have its perception deflected and its judgment warped by variations in the working of its own mechanisms. This is perhaps more often the case than in any other science, sociology alone excepted. The fallacies of the observer's mind no less than the distortion of phenomena to be studied must in both be excluded. But because the raw materials for investigation are infinitely complex, impure or apparently incommensurable, no clinician, still less philosopher or psycho-analyst, would admit that these impurities and intricacies cannot be detected and unravelled, or that it is impossible to take a purely objective view of all phenomena, and formulate general principles from them. We can, however, never be indifferent to the fact that the contributions of the mind of the individual whose phenomena are submitted to objective study may have an important value. In that which each man thinks he observes is something of himself.

It would accordingly seem to be the clear, indeed the paramount, duty of the teachers of Medicine to inculcate the virtues and to instruct in the methods of

observation as the primary faculty required in students, They should erect a monument to Zadig as their patron saint. Practice in observation surely confers aptitude, and though an intuitive faculty is beyond doubt a property of many minds, experience which has conferred facility is often regarded as intuition; may, indeed, in practice be indistinguishable from it. After the facts have been freed from contamination and accurately observed they must be collected, their exact individual values appraised, contrasts or comparisons made, and the strict relation of each fact to others alongside it laid bare, uniformities revealed, harmonies discovered, and coördinations suggested. In this way alone can what is dark become illumined. Blank observation of phenomena is not enough; the mind must not merely apprehend phenomena, but must also as it were play with them; by analogy creating suppositions or forming notions with regard to them, making tentative new arrangements, and drawing inferences from them. Hypotheses must be freely made and tested by further controlling observations or by experiment. As a kaleidoscope rearranges its fragments of coloured glass into new patterns, so must the mind by memory, imagination, reasoned judgment and unreasoning guesswork throw phenomena into every possible association with each other in the hope that in this way or that truth may come into view. Ideas must be encouraged to arrange themselves and to shape themselves anew in the observer's mind; yet no idea may be accepted which cannot be controlled by observation and experiment.

COMPLEXITY OF DISEASE.

The difficulties of the method of induction in Medicine are in part due to the fact that it is inevitably imperfect. Not all cases can at all times be submitted to observation; not all cases present at any one time the same objective features; conditions which present the same physical features, or functional aberrations, or which disclose the same, or approximately the same, sequence of events, do not always affect the bodies of those whose minds are similarly attuned to their disorders. Diseases recognised, let us say, by change of structure, by disturbance of function, or by onset of infection present a pageant in which innumerable individual phenomena take part. Not every example of a particular disease will bring forward the same evidences of organic or functional change or elicit the same mental reaction. The complexity inherent in all biological phenomena is seen here also. If, to take a crude illustration, the "symptoms and signs" possible in a given malady made a total of 100, each bearing its own number, it may be that only some 20 or 30 or 60 or 80 of the possible units of evidence are adduced in any one case of that malady; symptoms and signs bearing numbers in the thirties or in the nineties, we will say, may be omitted; or all those in the 40 or in the 70 group may together be wanting, yet the intuitive or well-trained mind may, by its sensitiveness to the problem, recognise with conviction, perhaps not communicable to others, the existence of that organic or functional change by which the patient is affected. Such a mind is more likely than the average to be free from bias, to be able judiciously to select fair samples from the total number of phenomena presented in an individual case or requiring to be considered in long series of cases. Such a mind, too, is apt to be more sensitive to the reactions of disease upon the temperament, habits, and so forth of the patient. Conclusions resulting from observation in relation to diagnosis are therefore rarely, if ever, unassailable, nor are they by any means impregnable in connexion with the discovery of causal relations. Events in Medicine, as elsewhere, are rarely dependent upon a solitary cause, and Medicine is perhaps distinguished from all other sciences, not only by the number and interaction of possible causes, but by the remoteness, apparent irrelevancy, and obscurity of causes, whether immediate or proximate.

Induction is, therefore, the method by which all the materials of knowledge are brought to an assize of the mind, all the manifold apparatus of the mind set to work upon them, all analyses and ultimate syntheses carried out, and occasions provided for the submission of the results so obtained to the method of deduction. Through observation and its auxiliary properties clarity, order and a singular felicity and coherence of all parts become apparent in a problem at first inchoate and bewildering.

The Galenic Method.

Now arises a fresh labour of infinite difficulty, the discovery of the soul behind the facts reclaimed; and here the Galenic becomes ancillary to the Hippocratic method, or may even dominate it.

The method of Hippocrates which I have just considered implies the observation of phenomena, of symptoms and of signs, in the condition in which they present themselves, unaffected by any control exerted by the investigator. The Galenic or experimental method depends upon the observation of conditions after specific influence has been directly and consciously exerted upon them by the investigator. Control is the essence of the difference in method. The Hippocratic method surveying a large field attempts to discover similarities, uniformities or discordances, to make comparisons and establish classifications through perception of common attributes, to reason from these, and so to establish general laws. The Galenic method sets up its own inquiries, reducing them in each individual example to the simplest terms in order to obtain an unequivocal reply. The mental qualities required in the investigator are those which the trained observer in the Hippocratic method possesses; although, owing to the comparative simplicity of the arranged inquiry, the same high demand is not always made upon them after experiments begin. In the devising of apt experiment the highest qualities of imagination find abundant opportunity. In both methods analysis and synthesis are necessary. While in the method of observation analysis predominates, it is in the methods of experiment that the isolated truths are disclosed which must lend themselves to synthesis. The act of comparing one observation with another requires analysis in greater degree than synthesis for its effective working.

Hominal and Animal Experiment.

Animal research by the Galenic method has high value, but strict limitations. For its perfect application the clinical or other problem which it is desired to resolve must be submitted to minute analysis. Every item so isolated may be the subject of a specific test by experiment; the answer obtained is then ripe for coördination with others similarly gained, in a synthesis which may contribute a significant or decisive comment upon, or a full explanation of, the original complex clinical or other problem. But regard must always be paid to the impossibility of translating in every case, or under all conditions, the animal experiment into terms strictly applicable to man. The material of the human body is neither the same, nor subject to the same influences, as that

of animals nearest to man; similar functions are not wholly discharged by precisely similar mechanisms; the pressure of environment is not comparable in the two cases; and above all the mind of man is infinitely complex in comparison with that of the most intelligent of animals. Other reservations are also necessary in respect of the validity of animal experiment. The changes produced in experiments upon normal animals are relatively gross; the changes produced by disease in man, in the stages which should arouse our chief interest are minimal, and of so fine a texture that we cannot properly compare them with these coarser induced conditions. Care in the selection of animals for experiment in order to afford reasonable accuracy of comparison with man is extremely important. Royle's discovery of certain functions of the sympathetic nervous system of the goat was applicable to man, although when animals lower than goats were chosen no such agreement could be discovered. Yet, when the fullest allowances are made, the method remains one of extreme importance, of most fruitful results, of a value indeed second in accuracy and relevance only to that of direct hominal research itself, with which, whenever possible, it should be combined.

In earlier papers I suggested that experimental work, the Galenic method, carried out upon man in the act of treating his disease should be designated "direct research," and the method of investigation upon animals, in the elucidation of medical problems, "analogical research." For these W. Trotter suggests equally appropriate titles, *direct* experiment and *collateral* experiment. It would, I think, be still better to speak of *Hominal* and *Animal* experiment and research. Hominal research, when it is possible to conduct it during operations, or at other times, is the one unassailably accurate method of acquiring the knowledge we need. Its gifts to Medicine have been invaluable, perhaps equal in number, and certainly not inferior to those made in any other manner. Its importance is, however, not adequately recognised, even by those who have every opportunity of participation in it. The great danger with which surgery is to-day confronted is that its technical procedures are so easily learnt, so frequently practised, and so amply rewarded that men who regard medicine as a commercial career can live prosperous lives without contributing a single fresh thought, the slightest modification of any known procedure, or the establishment of any new method, to Science or Art. The ideal surgeon is not merely one who operates, who carries out, perhaps with brilliant skill an operation, the necessity for which, or the scope of which is determined by another. He possesses a mind to discover and examine all the clinical features of a case with competence not less than that of a physician and with responsibility far greater, and then acts, when so required, not only as a therapeutic agent, but as one engaged in hominal research. The safe judicious surgeon who applies technical skill, prudence, and fine judgment to the relief of human suffering adds greatly to the repute of our profession and to the happiness of the world.

Medicine a Pure Science.

The general position of Medicine in relation to Science, the question whether Medicine may be classed among the Sciences, has been variously assessed by different writers, many of whom speak with acknowledged authority. My late revered teacher and friend, Sir Clifford Allbutt, in whose study I write, once failed to do full justice to Medicine. In his essay "The New Birth of Medicine" he refers to its "enlargement from an art of observation and empiricism to an applied science" and "from a descriptive code of surface phenomena to the discovery of deeper affinities." Medicine, it is true, is an applied science, but it is applied only after it has been created. It would still be a science if it were never applied; a science of observation, critical discrimination, inference, of coördination and classification of facts which then lend themselves to verification by experiment. It differs from other sciences, assuredly, only by reason of its broader base, the extreme complexity of its numberless parts, and their manifold reactions upon each other. The quarrel as to whether Medicine is Science or Art has not yet subsided and will never be silenced until it is recognised that it may rank with both, with Science in its inquiries, with Art in its practice. Hippocrates, who made of Medicine a Science, spoke of it as "The Art" and he wrote "Where the love of man is there also is love of The Art." Medicine is the Science of the phenomena of disease, and incidentally of their removal or control. As Science, it ranks with biology, and for that reason offers the admittedly greater difficulties attaching to classifications among living things as compared with non-living matter. Apart from all else it is Science, as "pure" as any other science, mathematics alone excepted; it uses the same methods as all other sciences, methods indeed which it invented, but it is Science based upon many other sciences, and compounded of them all, with something added of its own authentic property and power. It must use the materials and the technical methods fashioned for it by other sciences, by physics and chemistry, both of which are necessary to physiology; in closing the gap between physiology and pathology (as between pharmacology and clinical medicine) it must accept the necessary aid of both. It must be regarded as biological; and its meanings and tendencies and some at least of its origins are explicable only by reference to psychology. If Freud created an "embryology of the mind," as Trotter profoundly observes, the play of mind upon Medicine is inseparable from any of its parts. When every concession as to the indispensable value of all these sciences to the study and advance of Medicine is made, there yet remains the truth that in its processes of inquiry and of deduction, and of all else, in making all possible use of every intellectual and technical assistance, Medicine pursues the path of scientific method in the same manner as any other science. Medicine for its elucidation and extension owes much to the method of observation, and more also in recent years to the method of experiment, both hominal and animal. The method of observation is at the moment out of fashion: the vast treasures of knowledge it has created for us, all the advances in medicine resulting from it, are disparaged and in danger of being forgotten. The method of experiment has captured the fancy of many members of our profession, and by reason of the precision of its facile results has created a degree of confidence which has never attached itself to clinical observation alone.

Experiment in Clinical Medicine.

Yet, in respect of collateral experiments directed to the solution of human problems of disease, it is only through accurate observation that the terms of experiment can be decided. When the experiment is concluded the results must again be submitted to scrutiny, so that they may be checked, accepted, or refuted by the supreme inquisitor, observation. Observation is, indeed, the first act in scientific

procedure, and it is the last act also. Experiment plays its most necessary part in intermediate stages, but is throughout subject both to initial direction and to final control, either to renunciation or to acceptance. Both methods are applied to matters of diagnosis, of classification, and of medical and surgical therapy. Of diagnosis a famous physician remarks that "a diagnostician goes into the wards with one chief goal in view—it is to place a label correctly, to say that here is a species or subspecies that someone has described, its name being this or that." Economy of effort with economy of thought, Mach taught, was the constant tendency and desire of science. But this method does not imply economy of effort but an almost dishonest escape from effort, and if so restricted a view is taken of the diagnostician's task, the discredit and perhaps disuse into which the methods of clinical observation appear to be falling, in the opinion and practice of experimenters, is not difficult to understand. The diagnostician must envisage a larger problem. He is primarily concerned with the recognition and qualitative determination of morbid phenomena. After hearing the anamnesis he investigates, by a series of tests made not only by ordinary methods of examination but by the use of most sensitive apparatus, such functional disturbances or structual changes as are manifest in any part. He finds it necessary to consider the reaction of these phenomena and of the family history and environment upon the mind, personality, and behaviour of the patient. And finally he seeks for causes, discovering the responsible lesion, its nature, and position. The laboratory provides on some occasions nothing, on many occasions much, on a few occasions almost all, that is required to make a diagnosis. The clinician cannot hope to be expert in all methods of examination there conducted. For these he must in some degree depend upon others. His task is to gather together and to integrate the items of knowledge culled from all sources, including himself, to sift and to arrange the evidence, giving strict proportional emphasis to each part, and in the end to pass judgment. In seeking causes and explanations of symptoms of disease, in the making and selection of relevant observations regarding ancestry, environment, personality, and organic or functional changes, and in reaching considered judgments, a scientific procedure of the most austere and arduous kind must be undertaken. The difference suggested between the diagnostician and the clinical searcher is illusory and untenable. To suppose that diagnosis is no more than the reference of a case to its proper class in the index of disease is to confuse the simple (not final) classifications of biology or botany, each having its well-defined and immutable features, with the most complex and as yet imperfectly defined groups of clinical and pathological phenomena which are called diseases, and often wrongly regarded as "entities." To affix a label to a case, to christen it with any name, is not to understand it or to solve its problems or to indicate the appropriate methods of treatment. Diagnosis is, however, only the beginning, not the end, of the matter. The diagnostician does not, therefore, rest content with placing a label, for labels enough could never be printed. So restricted a view in regard to his duty as that I have quoted is incomprehensible.

As applied science Medicine lends itself to the method of *direct* experiment far less readily than perhaps any science. Sir William Jenner regarded the administration of every dose of every drug in the nature of experiment; that is the right view. And so it is with every operation. That the drug to be given, or the operation to be performed, has been tried on numberless occasions, with variable results, emphasises the need for regarding every occasion of such undertakings as an individual adventure to be closely scrutinised, and its results in their particular degree correlated with the general state of the subject. That surgery is something more than therapeusis, that it is an instrument for research, that its application requires adjustment to every individual case, and that observation continued over long periods can alone determine the validity of the experiment, all this is apt to be overlooked. The very complexity of the problem renders it impossible to consider it alonside the methods of the laboratory. In hominal research we are able to control only a few specific features; the majority are altogether beyond our control, unapproachable and immutable. The experiment and subsequent observation make, therefore, a more exacting and a more prolonged demand upon an observer than do the procedures of the laboratory, where isolated questions are submitted one by one for answer. Hominal research would, however, gain inestimably if the exact methods of the physiologist, in respect of records and their complete analysis, were strictly applied.

The assertion made by Sir Thomas Lewis that clinicians have a "less rigid standard of truthfulness than physiologists" is, nevertheless, a little incautious. It is perhaps forgotten that matters upon which the physiologist passes an opinion, the isolation of one incident for purposeful investigation, the planning of the collateral experiment, the nature of the question asked, and so forth, are all matters which, by comparison with clinical inquiry, are extremely simple. The solitary question posed by the physiologist is answered "yea" or "nay," the answer being conditioned by the power of the chosen animal to reply.

Present Remoteness of Physiological Research.

It is for many reasons a matter of serious concern to Medicine that physiologists have so much neglected hominal research. The primary explanation for this is to be found in that unhappy cleavage between descriptive anatomy and functional anatomy (physiology) which was made a century ago by Sharpey. A knowledge of structural anatomy is important, indeed indispensable to physician and surgeon alike, though none can deny that the teaching of this subject has become too precise and concerned with details too minute for the needs of ordinary medical practice. Nevertheless, when the surgeon requires special knowledge of any particular organ, the most advanced text-book may fail him and he is then compelled to make his own investigations into normal or aberrant details of structure. For physiology, however, the severance was an immediate and immense advantage. The Galenic method with its experimental basis naturally proved attractive to many eager minds. The charm of devising new experiments, the creation of new knowledge, the delight of intellectual adventure, the further problems raised on all sides were a source of endless interest and encouragement to minds seeking novelty, and quick to follow new thoughts to their conclusion. But, little by little and insidiously, investigators wandered away and away from interest in man, and the science of hominal physiology was more and more neglected. Physiology has, indeed, almost ceased to be the old physiology which concerned itself with the normal and adnormal functions of man. The great majority of investigators,

many of them among the ablest minds in our profession, have lost by degrees their contact with, or direct interest in, biology, and now the science of physiology is hardly entitled to the name it bears. It is an amalgam of biophysics and biochemistry. Is it not time that physiologists rediscovered an interest in man? Man's body is accessible to their inquiries not only in conditions of health, but also in conditions of incipient deviation from health as yet unrecognisable by the cruder methods of day-to-day clinical Medicine. The very earliest departures from normality are more likely to be recognised by those familiar with the normal than by those acquainted only with advanced disease; by physiologists, or those with training and discipline in laboratory methods, that is, rather than by pathologists. The gap between physiology and pathology is artificial, neither to the liking of clinicians nor to the advantage of progressive Medicine. Physiologists are justly proud of the great conquests of knowledge which lie to their credit since their science developed independent existence; and English physiologists have pride of place in many discoveries in recent years. But their aloofness from Medicine has yearly become more obvious; their discoveries of less value to the clinician; their science, indeed, is playing truant. If, for example, we read a standard text-book on physiology we may see a not inconsiderable proportion, say one-fourth or one-fifth, devoted to a discussion of the physiology of muscle. In any text-book of Medicine or Surgery how many pages deal with the injuries or diseases of muscle? The work of physiologists is doubtless of high scientific interest; but a large part of it has, as yet, little clinical importance. And the pity of it lies in the grievous neglect by highly competent scientific men, of the problems which physicians and surgeons are eagerly seeking the aid of the physiologist to solve.

Ignorance of Disorder of Function.

At present our further advance is restrained for lack of knowledge which only the physiologist can obtain or impart. In Surgery this is particularly distressing.

During the last 30 years the advances in Surgery have been considerable. Lister placed in our hands a potent weapon of which use was made to study the "pathology of the living" and to devise, and through many contributors from all nations to improve, operations for the relief of structural diseases. The anatomical training which all surgeons had received was of advantage in enabling them to conceive the new operations then required. In this direction, however, in meeting organic changes by appropriate methods, little remains to be done. Surgery is now advancing in new directions and is seeking to discover methods of dealing with disorders of function, rather than to repair disorders of structure. In this advance Surgery must call upon its allies for all possible help, and the needs of Medicine appear no less urgent. New inquiries relevant to our immediate necessities must be undertaken and it is the physiologists who must help us. Their old knowledge is not adequate; new knowledge must be created or new applications and new interpretations of old knowledge suggested; the investigations must in part at least be conducted upon man. Just as physicians, to use Sir William Osler's phrase, were "caught napping" by surgeons who asserted the frequency, and created or amplified our acquaintance with the symptoms of gastric and duodenal ulcer, and of cholelithiasis, so the physiologists have similarly had their somnolence proclaimed by the researches of Royle and Hunter, Wade of Sydney, Robertson of Toronto, Judd, Adson, Learmonth and others, as to the sympathetic nervous system and its influence upon maladies of men so diverse as Raynaud's disease, Hirschsprung's disease, endarteritis obliterans, and retinitis pigmentosa. Learmonth's recent investigations carry the possibilities of helpful or remedial surgery still further. The lack of interest in hominal physiology is deplorable, and inasmuch as it is crippling the advance of surgery it should no longer continue. Advances in Medicine seem most likely to be concerned in the near future with ductless glands, with the sympathetic nervous system, and with problems of immunity and virus research. It is imperatively necessary that physiologists, physicians, and surgeons should coöperate in the application of laboratory knowledge of these subjects to clinical problems. There is urgent need of intellectual symbiosis. If physiology is the science of function, we shall agree with Prof. W. E. Dixon when he says "Disease means the unusual functioning of tissues which may be the result of accident, hereditary weakness, or parasitic organisms. Generally it is wrong to speak of this as malfunctioning; the unusual functioning is physiological and perhaps the best for the organism under the unusual conditions." This statement is true and of deepest significance. For reasons already mentioned I believe it to be essential to the progress of Medicine that physiologists should interest themselves not only in normal functions, but in those "near normal," or, as I prefer to call them, adnormal functions, which indicate the earliest movement towards disease. Surely the greatest need in medicine to-day is the power of recognising early pathological changes, or the onset of functional aberrations, before grave or irremedial conditions have, perhaps tardily, developed. Such power lies in the methods of physiology or paraphysiology; by them alone the great gap between our knowledge of normal animal physiology (if it is in truth normal) and of early pathological changes in man would be narrowed or closed.

"Is there a Science of Experimental Medicine?"

The duty of undertaking, or of inspiring and financing these most necessary inquiries would seem to lie with our Medical Research Council, who have approximately £500 to spend on research on every working day in the year. In the last report of this Council the question is asked, "Is there a science of experimental medicine of which the actual material for study is the human patient? Or is scientific work by the physician or surgeon limited to the application in his art of scientific results worked out elsewhere in the laboratory, and delivered to him for use?" Are these questions for a research council subsidised by the State to ask, or those to which it should already have supplied the answer? If there were not a science of experimental Medicine, there could at least be established as a most necessary preliminary a school of experimental hominal physiology or paraphysiology, so that fundamental problems of man's functional life could be investigated as never before. The latter part of these questions appears to show a measure of unfamiliarity with the position of clinical Medicine and of clinical surgery to-day. I have no authority, physician though I am, to speak of medicine, yet the assumption, inherent in the question, that ready-made weapons are fashioned in the laboratory and handed over with magisterial authority to the physician who humbly

acquiesces in their prescribed use, is too amusing for serious discussion. With Surgery, however, I have some acquaintance. The most notable and revolutionary change which, thanks to Lister, has come over Surgery in the last 30 or 40 years is the creation of completely new knowledge of visceral disorders. The study of visceral diseases as a part of the disturbing and provoking activities of surgeons has helped us to rewrite the clinical symptomatology of such conditions as gastric and duodenal ulcer; cholelithiasis, diseases of the intestinal canal, of the pelvic organs of the female, and of such splenic troubles as hæmolytic jaundice and splenic anæmia? Is this scientific work dependent upon observation and experiment alike? Are all these advances in knowledge gained by a science of Experimental Medicine of which the "actual material for study" was the human patient? If so, what part has the laboratory taken in the creation either of this new knowledge, or of that no less important practical knowledge which is concerned with the remedial treatment of these conditions? Has not the contribution of the laboratory to the surgery of the stomach, for example, been almost negligible when it has not been potentially dangerous because divergent from human experience and therefore inapplicable? Has the laboratory helped us appreciably in our acquisition of knowledge regarding cholelithiasis, its origins, multitudinous complications, destinies, or treatment? Has it materially helped to supply the knowledge we so urgently desire of hepatic physiology in its insidious transmutation into hepatic pathology? The observations of Graham of St. Louis, and of my colleague, E. R. Flint, have shown that in cholecystitis and in other abdominal diseases requiring surgical treatment there is almost invariably hepatitis. In this observation may lie a clue to many things. What has physiology to tell us of hepatic functions or of the "near normal" liver that may help us with this problem? What interest has it shown in an observation so suggestive?

Physiology Lagging Behind.

Physiology in its relevance to hominal problems is not, as Sir Thomas Lewis following Sir Clifford Allbutt suggests, out-stripping medicine, but is lagging too far behind, concerned too much with the laboratory and with mice, too little with hospital wards and with men. We, the clinicians, have gained gigantic intellectual victories by the acquisition of new knowledge, and of a new vision, with barely recognisable assistance from the laboratory. In all these matters physiology has seeemed so aloof, or been so laggard, that our further advances are checked for lack of the particular knowledge which this science alone can now supply. Let no one for a moment suppose that I am critical of the methods or results of collateral experiment, or of their great value in illustrating and elucidating the problems of hominal disease. My grief is that laboratory workers do not fully realise the immense opportunities of combining animal with hominal research which are in no other way available to them, and which now lie at their hand. Physiological and other forms of research are drifting further and further away from clinical medicine, to the very real disadvantage of both. And one cannot help but observe a sense of superiority in claims made for the laboratory, and in assertions of the infallible rectitude of its results wherever they clash, or appear to clash, with the sober if in some degree intuitive judgments of the clinician. Yet it is in the application of the methods of both Hippocrates and Galen, in observation, critical judgment, and discrimination followed by hominal and animal experiment, that we shall most surely attain to greater and ever greater knowledge of the maladies of men, and so acquire power to conquer or subdue them. A new and most necessary impulse might, perhaps, have been given to hominal physiology and a new incentive to the development of both medicine and surgery along lines of adnormal physiology (paraphysiology) by the Medical Research Council. In the reconstruction of this body and in a wider conception of its duty may lie an opportunity for creating a new birth of British Medicine.

REMEDIES.

One remedy for the present remoteness of physiologists from clinical affairs would lie in an endeavour to develop and sustain their closer interest in human physiology, in the inaugural symptoms of disease, and in those incipient pathological changes which are correlated with them. Some constructive ideas of the highest importance long overdue might then issue from the laboratory and find a practical application in clinical work. The foundation of chairs of Human Physiology might well be the means of bringing together the workers in wards and in laboratories; the publication of a journal of Human Physiology, as suggested to me by Dr. Learmonth, of the Mayo Clinic, would be both helpful and inspiring. It is nothing less than disastrous that the knowledge of the sympathetic nervous system created by Gaskell and Langley should have remained so long without full application to the practice of Medicine. The work of Royle and Bennett has given a new vision to Medicine, has created new knowledge, and has resulted in the most consummate application of old knowledge to surgical problems. And it is, I think, no exaggeration to say that the results of their operative measures were at first received without enthusiasm, even with a rather supercilious condemnation by laboratory workers in physiology. We can surely do better in the future by bringing the labourers in the various fields of Medicine more closely together. It is surgeons who have begun to make the synthesis where Sharpey made the sharp division. In the Mayo Clinic with its annexe, the Institute of Experimental Medicine, where clinicians also work, this necessary fusion of interests is plainly, happily, and fruitfully seen at work. One of the fundamental purposes of the Banting Institute is to secure a close alliance between research and clinical Medicine.

Changes must be made, too, in the education of medical students. No one can pretend that this training is to-day entirely satisfactory. I said long ago that the purpose of education was not so much to provide a meal as to create an appetite. In Medicine, from preliminary subjects to the final round of clinical work, there is too much forced inculcation of text-book teaching or of rule-of-thumb tradition, and too little training in, or encouragement of, individual powers of observation. The fact that the method of Galen may be illustrated by daily work in wards or theatres passes almost unnoticed. So much learning has to be acquired in so short a time that the mind tends to become a storehouse rather than an observatory, and the student, always conscious of the exacting standards of imminent examinations, is concerned rather with acquisition than with discrimination. Fletcher Moulton used to speak of "the formula" for the acquisition and for the critical appreciation of learning. His formula implied the possession of a correct method of intellectual approach to new problems, not the master key to open new doors. It was based upon a knowledge of philosophy,

some acquaintance with which would be of inestimable advantage to students of Medicine. I should rejoice to see the Examination in "Logic and Psychology," restored to the London University, placed at the beginning rather than at the end of the series.

The suggestion has been made, in more quarters than one, that though the method of Hippocrates, of observation and of critical inquiry, and of classification, has rendered valuable service to Medicine in the past, the future advance of Medicine rests with the laboratory workers. *Nil sine laboratorio vita dedit mortalibus.* I have never consented to this opinion. I believe that the recent, so confident success of laboratory work owes much to the original impulse derived from clinical work, that when left to himself the laboratory worker has gone a little astray, and that, freed from the final need for clinical verification his efforts, admirable in themselves, have in no small degree been wasted so far as Medicine is concerned. Divorce of research from observation and of research worker from clinician appears imminent; its results will be tragic. The essential problem is so to arrange the work of hospitals that both geographically and spiritually the laboratory becomes a part of it. At present, routine examinations in the laboratory occupy all the time of the staff; the physician or surgeon receives a report or a series of reports upon one specimen or many submitted for examination. Meetings between clinicians and laboratory workers are not hourly, perhaps not even monthly; these men should be inseparable intellectual companions, and laboratory workers should more often seek their clue and find their inspiration in the suggestions of clinicians. With some necessary re-arrangement and curtailment of initial subjects of the student's curriculum, with anatomy simplified, shortened, made more relevant to the teaching of clinical subjects (with due recognition of the truth that it is a science concerned not only with what things are but also of what they do) the student would have more time to spend in the wards of such a combined unit of clinical and laboratory workers. He would acquire the "formula," he would realise that a capacity for clinical research which combines the methods of Hippocrates and of Galen is the essential quality he must acquire in his student days, and that all his professional life will then offer opportunities for gaining insight into the mysteries of incipient disease, of which to-day we know so little. The general practitioner, whose gifts to Scientific Medicine are considerable yet whose doom in the near future appears otherwise to be threatened, might in his way become a research worker in the one great field of Medicine which has found so few to explore it, that of the recognition, interpretation, and control of inaugural symptoms. Every physician and every surgeon would then be able to build his future career upon foundations which could never be shaken.

The Work of Banting.

The inauguration of the Banting Research Institute of the University of Toronto is for me one of the happiest duties of my whole life. This is a moment of high romance in a land of dreams come true. Dr. F. Banting, reading for the Primary Examination for the Fellowship of my College and still keeping his mind on problems of General Medicine, became possessed of the idea of extracting the hidden virtues of the islands of Langerhans, and of using them in the treatment of diabetes. As will so often happen with the dreamer of dreams he surrendered every other object to this quest. He came to Toronto, was allowed the use of the physiological laboratories, was helped by an assistant, Best, whose name is for ever linked with his own. The result of his labours, announced ten years ago, is now the common possession and the equal pride of all the nations of the world.

> "One man with a dream at pleasure
> Shall go forth and conquer a crown."

Banting has conquered, and to-day, as a gift from all mankind, he wears with so becoming humility the crown of immortality. In his honour we raise to-day this temple of Science.

Memorials are of many kinds. Some are graven in stone, some are cast in bronze, some are written in letters of gold upon the roll of honour which enshrines the names of the saviours of their Country. There is yet another memorial, born in the hearts of those from whom a heavy load of suffering and of sorrow has been lifted, and dedicated by them as an act of homage to a great deliverer. Take the journey of Autolycus and gaze down into the multitude of homes in which live the men and women and children of every nation, of every race, of every creed, from whom the cold hand of death has been turned aside by the skill of him whose services to humanity we commemorate to-day. Consider, too, that this is not the work of a moment nor even of one age, but that it will continue for ever. In the grateful hearts of those rescued from death and of those who spend their lives in the sacred ministry of healing the true memorial to Banting will be found. Is not his indeed a crown of immortality?

ADDISON'S DISEASE:
THE VALUE OF RADIOGRAPHY IN DIRECT DIAGNOSIS.

(WITH ILLUSTRATIONS ON PLATE.)

By Theodore Thompson, M.D. Camb., F.R.C.P. Lond., F.R.C.S. Eng.,
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The diagnosis of Addison's disease is usually based on the recognition of the symptoms and physical signs that result from the destruction of the suprarenal glands. Pigmentation of the skin and mucous membranes, asthenia of the nervous and muscular systems, feeble action of the heart associated with a low blood pressure, gastro-intestinal disturbances in the form of anorexia, vomiting, and diarrhœa, are the most important group of symptoms associated with the condition. The pigmentation which forms the most characteristic feature of Addison's disease has been termed "suprarenal melasma" or "bronzed skin." Neusser,[1] however, states that pigmentation of the skin and mucous membranes is not an integral part of Addison's disease, and though of decided diagnostic significance, is not an essential feature. In the absence of pigmentation the diagnosis of the condition is often quite impossible; it is true that in the presence of some of the other cardinal symptoms already referred to a diagnosis of Addison's disease may be considered, but even then it may be closely simulated by many other diseases.

Even when pigmentation is present the diagnosis may be difficult. Pigmentation of the skin may be congenital or racial, it may be associated with abdominal disturbances such as the presence of tuberculous, malignant, or Hodgkin's glands, pregnancy, or visceroptosis. It occurs in certain cachectic conditions such as carcinoma, exophthalmic goitre,

malaria, and is often well marked in pellagra. Irritation of the skin from comedones or the presence of parasites (vagabond's disease) may produce marked melanodermia, whilst pigmentation may be well developed and generalised in certain cases of sclerodermia. In hæmochromatosis the distribution of the skin pigmentation may simulate that of Addison's disease. Arsenical and silver salts may produce marked skin pigmentation, and certain cases of chronic jaundice may give rise to difficulties in diagnosis.

Since tuberculosis of the suprarenal glands provides the commonest causative lesion in Addison's disease it is not uncommon to find evidence of tuberculosis elsewhere in the body, especially in the lungs. The various immunity and tuberculin tests have proved of little value as most of the patients have passed the age of puberty. Direct evidence of suprarenal involvement in a suspected case of Addison's disease is difficult to obtain. Severe lumbar pain, although occasionally a prominent feature, is usually absent. In the same way, although tenderness on deep pressure over the region of the suprarenal glands can sometimes be elicited, I have found this physical sign more often absent than present. The taking of a direct X ray picture of the diseased suprarenals would afford the most accurate evidence of suprarenal disease, and I have been fortunate to obtain such a picture from a typical case of Addison's disease who was recently under my care at the London Hospital. The photograph (fig. I. on Plate) was taken by Dr. M. H. Jupe, of the X Ray Department, London Hospital, who submitted the following report of the case:—

"Two areas, triangular in shape, showing uneven calcification are seen lying one on each side at the level of the first vertebra. On the right side the shadow of the right kidney is clearly seen, and at the upper pole is a cap-like shadow showing mottled areas of uneven calcification. On the left side, the shadow at the upper pole is less clearly defined, but is crescentic in shape and lies not only over the upper pole of the kidney, but extends down the medial surface almost to the hilum. The shape and position of these partially calcified bodies correspond with that of the suprarenal glands."

The Case Described.

The patient from whom this photograph was taken was a woman aged 20, of medium build, and engaged as a fur-coat liner. For 12 months she had been complaining of loss of weight (2 st.), poor appetite, and general weakness. For the past seven months she had noticed that her face and hands had been steadily getting browner. Amenorrhœa had been present for four months. For two months she had experienced nausea when waking in the morning and lately she had vomited a little after each meal. There had been no diarrhœa. Recently she had fainted on several occasions, and had felt very dizzy on getting up from a chair. She had been discharged from her work three weeks previously for alleged slackness in the carrying out of her duties.

Before the onset of the present illness she had always remained healthy. A slight cough which had been present for some time was unaccompanied by sputum. Her father had died of pulmonary tuberculosis at the age of 32; her mother and four sisters are healthy.

On examination she was found to be a moderately well-nourished and developed female appearing considerably older than her actual age. The dark brown pigmentation of the face gave her the appearance of a mulatto.

Pigmentation.—Generalised and uniform deep dark-brown pigmentation affecting the whole of the face, neck, hands, less marked on arms and axillæ. Accentuation of pigmentation in areolæ around the nipple in both breasts, and along the linea nigra. Localised areas of pigmentation at points of pressure over the vertebral spinous processes and in the epigastrium (corset pressure). Numerous small areas of darker pigmentation scattered irregularly over face, neck, and forearms. Bluish-brown areas of pigmentation were present on both upper and lower lips. Many dark-brown areas or patches of pigmentation were well seen on the buccal mucous membrane, being more prominent on the left than the right side. Several deep brown spots of pigment were present on the dorsum of the tongue in its anterior one-third. The distribution of the pigment on the hand is well seen in fig. II.

The pulse was small, feeble, and thready; its rate varied between 80 and 100 per minute.

The blood pressure during the patient's stay in hospital (admitted May 29th and died June 8th, 1930) remained remarkably constant. The systolic blood pressure was 85 mm. Hg and the diastolic 50 mm. Hg. On June 5th Dr. Otto Leyton confirmed this reading by means of the recording sphygmomanometer. The systolic blood pressure fell to 75 mm. Hg two days before death.

FIG. II.

Shows the pigmentation of the hand and arm in the case of Addison's disease described in the text, compared with the unpigmented hand and arm of a healthy girl of the same age.

The heart sounds were clear but the first was weak and distant.

There was deficient movement and dullness on percussion over the upper part of the right lung; the breath sounds over the upper lobe were bronchial in character. On the left side there was also some evidence of slighter changes. There were no adventitious sounds. X ray examination of the lungs disclosed fairly extensive tuberculous infiltration of both lungs, the changes being more marked on the right side (fig. III. on Plate). Distinct tenderness could be elicited posteriorly on deep pressure over the site of the suprarenals, but no mass could be felt by abdominal palpation.

The urine, which contained a slight trace of albumin, presented no other abnormality.

Examination of the nervous system revealed a pronounced lack of energy and general muscular weakness, but no other abnormality.

Blood examination showed 5,600,000 red cells per c.mm. The hæmoglobin was 76 per cent. and the colour-index 0·68. The leucocytes numbered 9640 per c.mm., of which 47 per cent. were neutrophils, 36 per cent. small lymphocytes, 8·5 per cent. large lymphocytes, 5·5 per cent. large hyaline cells, and 3 per cent. eosinophils. The blood-sugar was 0·1 per cent.

TREATMENT.

During the patient's stay in hospital she was kept in bed. The vomiting which was present was allayed but not altogether prevented by three minims of dilute hydrocyanic acid, along with ten grains of potassium bromide. One grain of ephedrine hydrochloride was given twice daily for a period of five days, but as it appeared to produce no beneficial effect on the blood pressure nor on the general condition of the patient it was discontinued. From June 5th one drachm of dried extract of whole suprarenal (Armour) was given three times a day. On June 8th the pulse became imperceptible and the patient collapsed rather suddenly and died. Unfortunately, consent for a post-mortem examination was refused.

Comment.

From a review of the literature it has been possible to find only one case where the presence of calcification of the suprarenals had been demonstrated by X ray examination. In 1914 Rolleston and Boyd[2] described a case where a skiagram of the renal area of a boy aged 12 years, who appeared to be suffering from Addison's disease, showed the presence of shadows due to a calcareous mass in the region of the twelfth rib on the right side. There were less definite shadows on the left side. These shadows, although somewhat removed from the lateral vertebral border, were regarded by the authors as direct evidence of calcification of the suprarenal bodies. Tumours of the suprarenals have been submitted to X ray examination by Henle.[3] He recorded two cases of neuroblastoma, but did not publish the X ray photographs. Voorhoeve [4] has described the examination of carcinoma of the suprarenals by means of radiography. Vietti [5] has recorded the X ray appearances found in both acute and chronic inflammatory conditions occurring in the region of the kidney, but no mention was made of Addison's disease.

CONCLUSIONS.

(1) X ray examination of the suprarenals should always be conducted in cases of Addison's disease, because when a positive result is obtained it gives the only direct evidence of disease of the suprarenals.

(2) A positive X ray finding will only be obtained in those cases where calcareous deposits are present in the tuberculous suprarenal glands.

(3) In those cases of Addison's disease which are due to simple atrophy of the suprarenals, no shadows are revealed in the radiographs taken of the suprarenal region. Recently I requested radiograms in two other cases of Addison's disease, but in both instances they gave negative results. In both cases, also, it was possible to examine the suprarenal glands at necropsy where the cause of the condition was found to be simple atrophy of the suprarenal glands.

(4) In those cases of suspected Addison's disease where pigmentation is absent or where for other reasons the diagnosis remains doubtful, then an X ray examination of the suprarenal glands may assist in the true interpretation of the condition.

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3. Henle, C. B.: Amer. Jour. Rontg., 1928, xx., 414.
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MANCHESTER CONVALESCENT HOME FOR CHILDREN.—The Lord Mayor of Manchester recently formally opened Hollin Hall, at Bollington, near Macclesfield, which has been provided as a convalescent home for children by the Manchester and Salford Hospital Saturday and Convalescent Homes Fund. The house, which stands in four acres of gardens facing Alderley Edge, accommodates 12 boys and an equal number of girls.

THE KING GEORGE HOSPITAL, ILFORD.—The foundation-stones of the nurses' home of this new hospital have been laid by Lady Levita and Mrs. A. W. Green, wife of the chairman of the committee of management. The first section of the hospital, which will provide for a population eventually approaching 500,000, will contain 150 beds, and will cost £85,000. When the buildings are complete there will be 300 beds. Sir Cecil Levita states that no equally densely populated area is so lacking in voluntary hospital accommodation.

INFECTIVE GRANULOMATA AND STREPTOCOCCAL INFECTION.

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IN a previous paper,[1] dealing with two curious cases of glandular enlargement with mononucleosis and subcutaneous nodules in the scalp, we expressed the view that in studying the blood diseases of young children it would be advantageous "boldly to throw over any classification based upon classical leukæmia and lymphadenoma, and start anew on the assumption that we are dealing with infective processes to which there is a reaction by the tissues, and by the blood in particular, of an unusual kind." The two cases we then described represented more especially a type of unusual response in the blood, and recently we have had the opportunity of observing what we believe to be an unusual type of tissue-response to an ordinary streptococcal infection. The case presented many points of interest and, even if regarded merely as an example of lymphadenoma, the age of the child (13 months) makes it most unusual. The view we put forward, however, is that the condition was a response by the tissues to a streptococcal invasion which took the form of an infective granuloma, and that the case represents one of those borderline varieties of disease which particularly demand close study.

Clinical Summary.

A girl, aged 13 months, was admitted to the Hospital for Sick Children, Great Ormond-street, on April 29th, 1930, for "swollen glands in the neck." She was the second child of healthy parents, an older sister being perfectly healthy, and there was no family history of tuberculosis. This child was a full-term baby, born with normal labour, breast-fed for eight months, and then fed on a mixed diet. The first tooth was cut at five months and she had 11 teeth on admission. Before her illness she had begun to walk a little and to say a few words. The illness began seven weeks before admission when, about March 7th, 1930, she had "a bad cold" and her mother noticed that the right side of her neck was swollen. The glands were fomented and rapidly decreased in size. Five weeks after this the mother noticed that the left side of the face was swollen, and this led eventually to the child's admission. The child remained otherwise well and happy, sleeping well and eating moderately well.

State on Admission.—She was well nourished, happy, and free from pain. She appeared somewhat pale, with a temperature of 100° F., pulse-rate of 136, and respiration-rate of 28; she weighed nearly 18 lb. (the normal weight for her age is 21 lb.). There was considerable enlargement of all the cervical glands on the right side, especially the upper cervical and post-auricular group, which gave her face an asymmetrical appearance. These glands were firm and mostly discrete, but gave a feeling suggestive of early adhesion together. On the left side of the neck the glands of the posterior triangle and the supraclavicular group were most enlarged, with a curious bluish discoloration of the skin over them. There were a few small, firm, discrete glands in the right axilla and in both groins. The heart was rapid but otherwise normal, and the lungs appeared normal. The alimentary system showed good teeth and slightly enlarged tonsils which were not inflamed. No abnormality could be detected in the abdomen; the liver edge was easily felt, one finger's breadth below the costal margin (but this is normal for this age). The spleen could not be felt. The nervous system and the genito-urinary

[1] THE LANCET, 1929, ii., 812.

system were normal; no hæmorrhages were detected under the skin or in the retina.

There was some slight irregular pyrexia during the week after admission, and the glands on the right side of the neck enlarged slightly while those on the left side became smaller. The Wassermann reaction and Kahn reaction were negative. A fortnight after admission (May 15th, 1930) the glands were becoming larger in all areas, the bluish discoloration on the neck was more marked, and a stridor developed. Pyrexia of 102° was now present and the tonsils appeared inflamed.

Mr. James Crooks made an incision into the mass on the right side of the neck and discovered a small amount of thin purulent fluid. The child died shortly after the operation, with increasing difficulty in respiration. Cultures were made of the fluid from the neck, and streptococci were obtained.

Blood Counts.

—	April 29th.	May 12th.	May 15th.
Red cells.	4,000,000 per cm.	3,700,000 per cm.	4,100,000 per cm.
White cells.	12,800 per cm.	11,200 per cm.	34,000 per cm.
Hæmoglobin.	30 per cent.	50 per cent.	40 per cent.
Colour-index.	0·4	0·7	0·5
Polymorphonuclear leucocytes.	76 per cent. (9,728)	83 per cent. (90,967)	94 per cent. (30,960)
Small lymphocytes.	6 per cent. (768)	12 per cent. (1,344)	5 per cent. (1,700)
Large lymphocytes.	9 per cent. (1,152)	7 per cent. (784)	1 per cent. (340)
Mononuclears.	8 per cent. (1,024)	—	—
Eosinophils.	1 per cent. (128)	—	—

Post-mortem examination was performed 16 hours after death by Dr. R. C. Lightwood. The heart was normal. The lungs showed early broncho-pneumonia in both lower lobes. The alimentary tract was normal throughout. The tonsils were not enlarged or inflamed. The spleen was not enlarged but was engorged with blood, soft and easily friable. No nodules of any deposited material were found. The liver was somewhat enlarged, with two small white deposits in its substance suggestive of lymphadenomatous material. The kidneys and suprarenals were normal.

Lymphatic Glands.—There was a mass of adherent glands on both sides of the neck. Many of the glands were breaking down and contained thin, blood-stained pus. The mass on the right side was the larger, and pressed on to the lateral wall of the pharynx. There was also some œdema of the glottis and considerable œdema and induration of the skin on the right side of the neck. The mediastinal glands were much enlarged, dark-blue in colour, and not breaking down. Mesenteric glands were normal. The right iliac and inguinal glands were enlarged and beginning to break down. The left iliac glands were normal. The pre-aortic glands were enlarged. Cultures of the heart's blood showed a hæmolytic streptococcus. Cultures from an inguinal gland were sterile.

HISTOLOGICAL EXAMINATION.

Lymphatic Gland.—Surrounded by a definitely thickened capsule, the gland was very disorganised in structure, showing areas of intense engorgement with red blood corpuscles and polymorphonuclear leucocytes. Areas of gland tissues remained, however, showing (1) excess of eosinophils, (2) excess of endothelial cells, and (3) many large multinucleated endothelial cells, with centrally placed overlapping nuclei of the type associated with Hodgkin's disease (see Figure). The centre of many of the lymphoid follicles was invaded by endothelial cells. Staining for tubercle bacilli produced negative results.

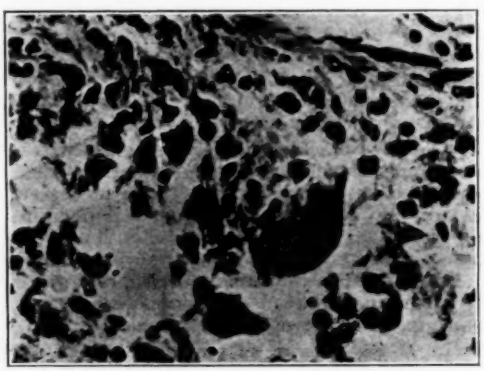
Liver.—The two nodules showed no definite demarcation from liver tissue. The bulk of the nodule was made up of endothelial cells, loosely distributed in a fibrous stroma. Eosinophils were present in excess and there were many large endothelial cells with several nuclei.

Spleen.—This organ showed great engorgement with red blood corpuscles and polymorphonuclear leucocytes. There were no definite endothelial cells to be seen and no giant cells. The appearance was that of acute inflammation, such as occurs in septicæmia.

Discussion.

In this case we have the story of a healthy child who, following a "bad cold," develops glandular enlargements which clinically bear a strong resemblance to those of Hodgkin's disease; post-mortem findings, such as the nodules in the liver and the histological appearances of the glands, confirm this diagnosis. Yet at the same time there is evidence of a streptococcal infection, and it is upon the relationship of this to the lymphadenomatous condition that we wish to focus attention. Rolleston,[1] in one of his admirable surveys of Hodgkin's disease, summed up the evidence of its ætiology in the phrase that its "most probable nature is an infective granuloma." In the same paper he goes on to discuss chronic inflammatory enlargements of glands, similar to Hodgkin's disease, which he has seen in various forms of infection, even such as *Bacillus coli* infection of the urinary tract. Ledingham[2] has investigated the type of tissue response produced by vaccinia virus, and states that it "is essentially of the order of an acute infective granuloma in which the reticulo-endothelial system is primarily and dominantly involved." He goes on to say that "evidence is afforded that precisely similar tissue responses occur when the virus is introduced into tissues remote from the epiblast"—e.g., the spleen—and among the actively dividing adventitial cells multinucleated and giant forms were present.

We are not here concerned with the exact infective process usually to blame in lymphadenoma, or even



Microphotograph of section of lymphatic gland (× 500) to show multinucleated cell. (For description see text.)

with the question whether a specific organism is likely to be incriminated. We have brought forward this case and quoted the authorities mentioned above in order to suggest that in studying such a disease-process as lymphadenoma the idea of the "soil" needs to be kept more in the foreground than that of the "seed." We hold that, in our present case, if the streptococcal infection had been more virulent at the onset or the child's resistance less, an acute septicæmia would probably have developed at once upon her "cold" and, on the other hand, if her resistance had been greater the terminal acute features would have not been present but she would have died with cachexia and cardiac failure as in "ordinary" lymphadenoma. In other words, the child's tissues put up an unusual border-line type of response to streptococcal invasion, which closely resembled Hodgkin's disease if, indeed, it was not identical.

It might be argued that here was a straightforward case of lymphadenoma with a terminal streptococcal infection. To this we must reply that: (1) the age of the child is most unusual for the ordinary variety

[1] Rolleston, H.: Brit. Med. Jour., 1926, i., 230.
[2] Ledingham, J. C. G.: Brit. Jour. Exp. Path., 1924, v., 332.

of Hodgkin's disease; (2) there was no clinical resemblance to streptococcal septicæmia until, literally, the last few hours; and (3) if the streptococcal invasion is to be regarded as a "terminal" event, when exactly did the new infection come into the picture? The granulomatous deposits in the liver, and the curious improvement in the state of the glands in one situation followed by enlargement of glands in another place without any obvious fresh primary focus, are facts which have to be faced if the lymphadenomatous nature of the case is denied; the question of such disorders as glandular fever or leukæmia can be excluded by the blood picture.

We would, therefore, submit that in the present case the tissue response to streptococcal infection was of the nature of an infective granuloma resembling Hodgkin's disease, and we would repeat our plea for the frank abandonment of too rigid a classification of the disorders of the blood, lymphoid elements, and reticulo-endothelial system as they occur in childhood. In this way only, we believe, are there possibilities for the advancement of knowledge.

SOME PRINCIPLES REGULATING THE LIFE AND DEATH OF PATHOGENIC INTESTINAL BACTERIA

IN ARTIFICIAL MEDIA AND IN FRUIT JUICES.

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RECENTLY interest has been shown in the possibility of combating bacterial infections by means of diet. If it were possible to treat the intestinal tract as if it were inert, then the problem would be easy, because bacteria can be destroyed in the laboratory without the aid of harmful antiseptics. As this does not seem to be generally appreciated, it may be of use to discuss some of the principles which govern the growth of bacteria outside the body.

Many organisms which produce acid in culture media containing carbohydrates will give rise to alkali if cultivated upon media containing only proteins. This faculty of breaking up carbohydrates with the production of acid or of acid and gas is largely used for differentiating organisms into types. Let us first, however, consider what happens in a simple media consisting of water with 0·5 per cent. common salt and 1 per cent. peptone. Sierakowski [1] has shown that during the first four days the bacteria regulate the medium so that most of them reach neutrality; alkaline media are acidified and acid media are alkalinised.

Bacteria grow most rapidly in a culture medium which has originally the hydrogen-ion concentration which they try to reach in the first four days—e.g., *B. coli* and *V. choleræ* at about pH 7·6, and *B. dysenteriæ* (Shiga-Kruse) at 6·8. The further the hydrogen-ion concentration is originally from this point the slower is the initial growth. Without growth no changes in pH are observed, this change being therefore strictly a function of growth processes. After four days all bacteria tend to change the media to the alkaline side. Bacteria grown on sugar-free media produce alkaline substances the chemical nature of which is unknown, and at the same time carbon dioxide is liberated and increases the acidity of the media. The more opportunity there is for the escape of carbon dioxide, the more rapidly do the cultures become alkaline—e.g., in loosely plugged culture tubes with a surface that is large in proportion to the depth. Hermetically sealed tubes do not become alkaline, but if to these sealed tubes soda lime be added to absorb the carbon dioxide, then alkalinisation goes on as rapidly as in open tubes. Later the production of alkaline metabolic products leads to gradual alkalinisation.

Formation of Acid and Death of Organism.

If a sugar or carbohydrate, however, is present in the media, one of two things happens: first, the bacteria may not break up the sugar, which remains unchanged, and the result is the same as if the media were sugar-free; or, secondly, the bacteria may break up the sugar with (*a*) the production of acid or (*b*) the production of acid and gas. The action remains constant for any number of generations. I have shown in experiments previously published [2] that the acid production in glucose peptone water is independent of the number of organisms placed in the medium to start with. That is to say, if in one tube containing 1 per cent. glucose peptone water one *B. coli* be introduced, and into another exactly similar tube 250,000 *B. coli*, then at the end of 42 hours' incubation there will be the same number of organisms, roughly speaking, and in both tubes the pH will be the same. With *B. coli* the pH will always be 4·2, which is the maximum acidity attained and is quite constant for this organism. It is true for all strengths of glucose peptone water if there be at least 0·35 per cent. of glucose present. If there be 0·3 per cent. of glucose or less, then the pH will be less acid than 4·2, and if only 0·15 per cent. of glucose be present then the media will become neutral, and in eight days will even go to the alkaline side. The acid production varies in degree with the different bacteria—e.g., the pH with *B. typhosus* in glucose peptone water is 4·4 and is constantly at that figure. If daily subcultures are made from these tubes of glucose peptone water, inoculated with either *B. coli* or *B. typhosus*, it will be found that, when the percentage of glucose is 0·35 per cent. or higher, the tubes are sterile on the fourth or fifth day, while in the tubes with 0·3 per cent. of glucose or less the organisms live for at least three weeks. In fact, in glucose-free peptone water or broth *B. coli* have been found alive after a year.

If instead of peptone water bouillon made from meat be used, the pH reaches only a figure of 4·4 with *B. coli*, and that only if 0·4 per cent. of glucose be present; the organisms die on the eighth day, taking much longer than when peptone water is used. If only 0·25 per cent. of glucose is present, the medium is on the alkaline side of neutrality on the nineteenth day and the organism continues living. Although it is common in culture media to use 1 per cent. of glucose, actually only a portion of this is broken up. Sufficient acid or substances of an acid reaction are produced to prevent further growth and cause death within a few days. This lethal action is closely related to the acidity or hydrogen-ion concentration. The actual acid formed differs with the sugar present in the media, as well as with the organism tested. *B. coli* grown in glucose produces carbonic acid and an inflammable gas, which is a mixture of hydrogen and marsh gas. *B. typhosus* in a similar medium produces lactic acid, but no carbonic acid or other gas. In other cases acetic, oxalic, formic, and hippuric acids are formed.

The formation of acid, then, is the explanation of the death of the bacteria. A possible reason for the retarding of the lethal effect, when broth in used, may be found in the work of Koessler and Hanke.[3] Working with *B. coli*, they found that the very highly toxic base histamine is obtained from the amino-acid histidine by the splitting of carbon dioxide from the acid group of the amino-acid. This histamine production by *B. coli* was found only in cultures where considerable quantities of acid were produced at the same time. This strongly basic substance offsets, to some degree, the acid production, and enables the organisms to develop further before the hydrogen-ion concentration reaches the point of inhibition.

Peptone waters with varying known hydrogen-ion concentrations can be prepared by adding varying quantities of N/10 sodium lactate and N/10 lactic acid to 1 per cent. peptone water which does not contain any glucose, producing a "buffer" action. It was found in these stable media that *B. coli* died on the second day in the media with a pH of 4·2, but was alive in the tubes with pH of 4·3 and 4·5. In another experiment with *B. paratyphosus* A, the organisms died on the second day in the tube with the pH 4·3, but was growing in the tubes with pH 4·5 and 4·7. These tubes connected the lethal effect more definitely with the acid production.

These are laboratory experiments, and it will be readily understood that the conditions inside the human body are quite different. Otherwise it would be easy to control the flora of the intestine and cure intestinal inflammations. In the first place glucose, if given by the mouth, is quickly absorbed. It is also absorbed if given through an appendicostomy opening. In one case, in which this was done in a patient with a very prolonged colitis following bacterial dysentery, no glucose was found in the fæces and their pH was only slightly acid. Again, *coli* organisms are not found in the stomach, where the reaction is acid during digestion and continues acid. It is, of course, possible for these organisms to pass through the stomach with sufficient rapidity to escape death, but they do not find the stomach and upper part of the intestinal tract a suitable nidus for their growth. It is interesting to note, however, that in some cases of cancer or of pernicious anæmia where there is a lack of acid in the stomach, *B. coli* can be found in the small intestine at a much higher level than in healthy people. These remarks refer to the Gram-negative intestinal bacilli as well as to staphylococci and streptococci. They do not refer, in the same degree, to yeasts and to the acidophil bacilli, to which group belong the Bulgar bacillus and bacillus of Boas, which can occasionally be found in the stomach contents. After acid fluids pass through the stomach they are soon diluted and come in contact with alkaline bile and other alkaline body fluids, so it is difficult to imagine that the contents of the small or large intestine could have for 24 or 48 hours a pH in the neighbourhood of 4·2. These are the conditions that would be necessary to conform to those we have in the experiments described above.

Action of Fruit Juices.

The acidity of fruit juice varies within certain limits according to the different specimens, but the figures given are representative of fruit bought in March and April of this year. The juice of oranges had a pH of 3·2 and 3·4, the juice of a lemon was pH 2·0, the pH of tinned peach juice was 3·6, and the juice expressed from an apple was 3·5. Orange juice killed *B. typhosus* in times varying from 9 to 22 hours, *B. paratyphosus* A from 9 to 30 hours, *B. coli* and *B. paratyphosus* B in 48 to 120 hours. Tinned peach juice killed *B. typhosus* and *B. paratyphosus* A in 30 hours, *B. coli* and *B. paratyphosus* B in 72 to 120 hours. The juice of a lemon killed *B. coli* in 6 hours, although there was very great diminution in the number after 3 hours. *B. paratyphosus* A, *B. paratyphosus* B, and *B. typhosus* were all dead in 3 hours. Undiluted lemon juice killed *B. typhosus* in from 5 to 9½ minutes. The bacilli were killed in 15 minutes by dilutions of 1 in 2 and 1 in 4, while a dilution of 1 in 16 took 6 hours. Lemonade made from the juice of one lemon, two teaspoonfuls of sugar, and ten ounces of water had a pH of 2·8. In ten hours it killed *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *B. dysenteriæ* Flexner, and *B. dysenteriæ* Shiga, and very nearly killed *B. coli* in that time. Staphylococci were killed in 5 hours.

In every case about two teaspoonfuls of the different fluids were employed in the experiments with about 2,000,000,000 of the different organisms. This was a fairly exacting test, as it would be difficult in natural circumstances to get such a concentration of bacteria.

Apple Pulp and Treatment of Dysentery.

Finally, several experiments were done with apples made into a pulp and boiled both with and without sugar. The pH varies in this case according to the dilution with water. The results recorded were with a pulp such as would be pleasant for eating and had a pH of 3·6. Two teaspoonfuls of this pulp were put in test tubes and mixed with 2,000,000,000 of various organisms and kept in the incubator. Subcultures were made at periods. There was very little difference in the results, whether the apple was boiled with or without sugar. *B. dysenteriæ* Shiga was dead in 10 hours; *B. dysenteriæ* Flexner and *B. typhosus* were dead in 48 hours, but the subcultures showed only slight growth after 10 hours. *B. paratyphosus* A showed very slight growth in 10 hours and was dead in from 24 to 30 hours. *B. coli* and *B. paratyphosus* B were still alive at the end of 48 hours. Six strains of *B. paratyphosus* B were tested and all showed this resistance to the action of apple pulp, in contrast to *B. paratyphosus* A, which was very sensitive. As a control, experiments were done at the times indicated as those at which the organisms died. Peptone water was added to the tubes to dilute the media and the tubes were then incubated. This proved definitely that they were sterile and that the subcultures in the previous experiments were not due merely to special portions of the media being sterile.

This last experiment is of special interest on account of the statement by Prof. Moro,[4] of Heidelberg. He states that he can cure children suffering from dysentery and from acute and chronic diarrhœa. For two days he gave 20 to 50 oz. daily of ripe apples made into a purée, equivalent to 7 to 20 moderate-sized apples. Nothing else, not even water, was given for two days. I have had no experience of this form of treatment, but it is to be noted that, from the in vitro experiments, the method of giving the apples, so that dilution is reduced to a minimum, seems that which would be most likely to give satisfactory results. It seems feasible that where an acid fluid might fail because of the ease with which it was neutralised, apple in bulk might not be so acted on, and might release acid in that part of the intestinal tract where the inflammation is situated. Dr.

J. W. Dickson[5] states that this method was employed by Jenner in cases of enteric, and quotes some of his own experiences. This form of treatment is sure to have a trial and the results will be awaited with interest, but it is most important that the method described should be adhered to so that the pH is disturbed as little as possible by dilution. If this treatment should prove of value, then I think it will be found that the explanation is on the lines of the experiments given in this paper.

Summary.

Gram-negative intestinal bacilli produce in glucose and some other sugars acids, which cause their death in peptone media in a few days. Each variety produces acid till a maximum hydrogen-ion concentration is attained. This concentration is constant for each variety of bacillus. It is 4·2 for *B. coli* and 4·4 for *B. typhosus*. Fluids with acidity below 4·2 cause death of the organisms rapidly, the rapidity depending largely on the degree of acidity. Two teaspoonfuls of the juice of a lemon kills 2,000,000,000 *B. typhosus* in less than ten minutes. In the body this acidity is rapidly neutralised after it leaves the stomach, but it seems reasonable that apple pulp might be effective where a fluid would be neutralised.

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SPONTANEOUS PNEUMOTHORAX.

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(WITH ILLUSTRATIONS ON PLATE.)

BY spontaneous pneumothorax is meant a condition in which air has escaped into the pleura by nature's means; the term is used in contradistinction to artificial pneumothorax, in which the air has been introduced into the pleura by the physician. Both conditions, therefore, have this in common, that air is present in the pleura. They differ in that the air came from the lung in spontaneous pneumothorax, its admission being due to rupture of the lung into the pleural cavity; whereas in artificial pneumothorax the air came from outside the body, and gained entrance not by natural processes but by means of a trocar and cannula. The induction of artificial pneumothorax is now a commonplace in the diagnosis and treatment of diseases of the chest. By this means, under favourable circumstances, the lung can be collapsed to any extent up to complete compression against the spine, the degree of compression being under control. Similarly, in spontaneous pneumothorax the amount of compression of the lung varies. There may be but a small escape of air into the pleura, compressing only a small portion of the lung, further spread being limited by pleural adhesions. In other cases various intermediate degrees of compression may be found. Finally, in the most marked instances the escape of air may be so great as to compress the whole lung completely.

Ætiology.

Spontaneous pneumothorax, which was first described by Itard[1] in 1803, occurs more often on the left than on the right side; it is found complicating various conditions, notably pulmonary tuberculosis. Biach[2] analysed 918 hospital cases, and of these 715, or 77·7 per cent., were in this category. Of the remaining 203 cases, 65 complicated gangrene of the lung, 45 empyema, and 32 wounds of the chest. Among other cases may be mentioned those which follow the rupture of an emphysematous bulla, in people who may have been previously in good health (Case 1); and also those which develop during a paroxysm of asthma (Case 2). The literature shows that pneumothorax thus complicating asthma is a very rare occurrence. Recent advances in knowledge have made it possible to demonstrate spontaneous pneumothorax in various conditions in which its presence was previously unsuspected, particularly when the pulmonary collapse is incomplete. It may, therefore, be the case that Biach's figures exaggerate the actual preponderance of pulmonary tuberculosis as a precursor of spontaneous pneumothorax.

The cause of spontaneous pneumothorax in pulmonary tuberculosis is the breaking down of a lesion situated close to the pleura and perforating its visceral layer (Case 3). The reason why the complication does not occur more often in pulmonary tuberculosis—the site of which is so often near the periphery of the lung—is that the overlying pleura is usually thickened and often adherent.

Symptoms and Diagnosis.

In a typical case of complete spontaneous pneumothorax, in which so much air has entered the pleura that one of the lungs has become completely collapsed, the history tells of an illness with an acute onset, ushered in by sudden and continuous thoracic pain or discomfort which is usually confined to the neighbourhood of the lung rupture. The patient sits propped up in bed, breathing rapidly, and sweating in the face. The pulse-rate is between 120 and 140 per minute. He is, in fact, gravely ill and, when complete spontaneous pneumothorax occurs in advanced pulmonary tuberculosis, this complication often ends his life. The heart is found to be drawn towards the uncollapsed lung. The chest does not move over the collapsed lung during respiration. Vocal fremitus and vocal resonance are cut off, and there may be hyper-resonance on percussion. But the most strikingly characteristic sign of the condition is discovered on auscultation; on the collapsed side the breath sounds cannot be heard. This is a silence of emptiness, but, just as in an empty building small movements strike the ear, so in an empty chest certain sounds, small at their points of origin, may reverberate in the cavity and become modified in character. For instance: (1) over perhaps a small area only, we may hear blowing or cavernous breath sounds; (2) we may hear musical râles—metallic tinkling; (3) if two coins are hit together on the chest wall, we may find, on auscultation, that the sound produced becomes bell-like in quality. This coin sound, however, is often absent. If cavernous breath sounds can be heard we may assume that the hole into the lung is still patent, and if, a day or two later, they can no longer be heard, it would be evidence that the hole had closed in the interval. The spleen or the liver respectively may be found displaced downwards, according to which side is involved. In

a certain proportion of the cases a pleural effusion appears on the affected side (Case 4). This fluid alters in position with the position of the patient, and it may produce a succussion splash. When spontaneous pneumothorax occurs in a tuberculous patient, the effusion, when present, may contain large numbers of tubercle bacilli. This is what one would expect, for a tuberculous focus has burst into the pleura. It thus differs from an ordinary pleural effusion in which tubercle bacilli can seldom be demonstrated, the fluid being an exudate from a tuberculous lesion. An X ray examination is valuable in diagnosing spontaneous pneumothorax when the patient is well enough to undergo it. By this means the degree of pulmonary collapse is often well shown. When a pleural effusion is present the fluid moves freely in the pleural cavity, following the laws of gravity. The appearances thus contrast strongly with those of ordinary pleural effusion.

The diagnosis of partial pneumothorax presents more difficulty than that of complete pneumothorax. In such cases the symptoms and the physical signs are not, as a rule, striking, though a sudden onset accompanied by pain in the chest is often noted. Special stress should, therefore, be laid on any slight change in the position of the heart, but it must be remembered that the heart may not be displaced even when much air is present in the chest, particularly in robust persons. X rays are often of little help in partial cases, except in the early stages, unless fluid is present. If, however, free fluid is demonstrable at a pulmonary base they are of much value, for its presence clinches the diagnosis.

Spontaneous Pneumothorax Complicating Artificial Pneumothorax.

The occurrence of spontaneous pneumothorax among patients undergoing artificial pneumothorax treatment is not surprising for, when the surfaces of the pleura are separated by a layer of air, the pleurisy caused by tuberculous focus near the surface of the lung cannot produce protective adhesions. Of 135 cases of pulmonary tuberculosis in which artificial pneumothorax was successfully induced at Ventnor,[3] nine developed lung rupture. The figures of other series of cases are as follows: Carling, one case in 67; Morriston-Davies, two in 90; Riviere, one in 80; and Forlanini, eight in 159. Spontaneous pneumothorax thus appears more common in cases of pulmonary tuberculosis which are undergoing artificial pneumothorax treatment than in other cases of pulmonary tuberculosis. It is, however, a question whether this difference is so marked as it appears at first sight. If artificial pneumothorax treatment is being carried out, the spontaneous condition is more likely to be diagnosed, as the patient is usually under the observation of an expert. It is probable that partial spontaneous pneumothorax, occurring in the course of pulmonary tuberculosis, is not infrequently diagnosed as an attack of pleurisy. Thanks to Hutchinson and Blair,[4] this mistake should be made less often in future. These observers have pointed out that in spontaneous pneumothorax complicating artificial pneumothorax a typical temperature curve may be found. They only deal with cases in which recovery took place, for in fatal cases the type of pyrexia is necessarily modified. The following is their description:—

1. A steep initial rise of temperature coincident with the first symptoms.
2. A gradual staircase fall to normal, in which the previous daily variation of temperature is roughly preserved.
3. The fall by lysis reaching the 99° level—i.e., approximately normal limits, in a period which varies with the height of the initial rise. Where the initial rise is in the neighbourhood of 104° F. the temperature reaches normal limits in almost exactly three weeks, and if in the neighbourhood of 103°, in about 14 days.

When spontaneous pneumothorax is suspected in a patient who is undergoing artificial pneumothorax treatment, a change in the intrapleural pressure would assist diagnosis. As the intrapleural pressure is always noted before air is admitted into the pleura during this treatment the figures will be available for comparison.

Prognosis.

In cases of spontaneous pneumothorax, whether partial or complete, the patient usually recovers with complete re-expansion of the lung in the course of a few weeks, provided that he had been previously in good health. The most typical instance of this is when an emphysematous bulla ruptures in an active and robust individual. But when complete spontaneous pneumothorax occurs in advanced tuberculosis the prognosis may be difficult. In some of these cases it causes death within a few days. In others it acts as an additional handicap, the patient's downward course being accelerated in various degrees in different cases. In others, again, the patient recovers from the immediate dangers of the pneumothorax and gradually sails into calmer water, the pneumothorax persisting and the patient not being apparently any the worse or any the better for his experience. Finally, in certain cases, the complication is followed by an improvement in the patient's condition, the collapse of the lung causing conservative changes in the lesion. There are a few cases of pulmonary tuberculosis going about with a complete spontaneous pneumothorax. Such patients are occasionally seen in the out-patient departments of hospitals, presenting themselves, it may be, because of symptoms which did not arise in the chest. Spontaneous pneumothorax must, therefore, be regarded as one of Nature's ways of curing pulmonary tuberculosis, for acute extension of the disease cannot take place in a collapsed lung. Thus the modern treatment of inducing artificial pneumothorax is really an imitation of Nature's methods. That healing may result from spontaneous pneumothorax has been known for many years, for the older observers were of opinion that its onset in advanced tuberculosis sometimes tended to the prolongation of life.

Treatment.

The physician's aim should be to control the situation by placing the patient in favourable surroundings, by combating shock should it occur, and by removing air or fluid from the pleural cavity in certain instances. In pneumothoraces of small and moderate size no treatment is called for beyond rest in bed. When, however, the pneumothorax is complete, and the patient is in distress, an injection of morphia should be given and the best nursing obtained. Marked dyspnœa suggests that the lung rupture is valve-like, and that a positive pressure in the pleura is present. When this is suspected, a fine trocar and cannula may be passed into the chest and a pad of gauze fixed over the cannula when the trocar is removed. If positive pressure is present a puff of air is heard on withdrawing the trocar and the patient's symptoms are immediately relieved. When an artificial pneumothorax apparatus is available, it is better to attach it to the trocar and cannula for, by means of the manometer which forms part of the

apparatus, the intrapleural pressure present before and after the withdrawal of the trocar can be noted. Small pleural effusions may be ignored, but large effusions should be drawn off and replaced by air. One reason for air replacement under these circumstances is that a buffer of air better prevents pleural adhesions from being formed than a buffer of fluid.

Illustrative Cases.

The following cases illustrate many of the points referred to above. In Cases 1 and 3 it was presumed that the pneumothorax was caused by the rupture of an emphysematous bulla, but no demonstrable generalised emphysema of the lungs was present in either instance. Pulmonary tuberculosis was not present in either of these cases or in Case 2. The latter case is included on account of the rarity of pneumothorax as a complication of asthma. Case 4 was one of pulmonary tuberculosis in which spontaneous pneumothorax developed while the patient was undergoing artificial pneumothorax treatment.

Case 1, a man aged 22, a storekeeper's assistant, was admitted at the Royal Chest Hospital on May 4th, 1929. He had felt well on May 3rd but, on waking in the morning, he found himself lying on his abdomen with pain in his right chest and a dry cough, and feeling short of breath. His health record and his family history were good. On admission, the breathing was restrained, as deep respirations caused pain on the right side. The patient did not, however, feel ill. The pulse- and respiration-rates and the temperature were 80, 30, and 98·4° F., respectively, and there was no cyanosis. The apex-beat was in the normal position. The physical signs on the right side were as follows: The percussion note was slightly hyper-resonant all over the back and over the first three interspaces in front. The breath sounds were weak throughout, and they had an amphoric quality over the lower half, where the whispered sound was increased. The liver was not displaced.

His recovery was uninterrupted. On May 27th little difference between the two sides could be detected, and the patient got up on June 8th. He was discharged on the 27th.

It was presumed that the pneumothorax was caused by the rupture of an emphysematous bulla, but the lungs as a whole did not appear to be emphysematous, either on clinical or X ray examination. Tubercle bacilli were not found in the sputum. X ray examination showed the right lung to be partially collapsed on May 7th, a diminished amount of collapse on the 24th, and a re-expanded lung on June 11th.

Case 2, a married woman aged 38, who had been subject to attacks of asthma for 18 years, went to Hong-Kong early in 1925. In March of that year, during a spell of hot damp weather, she had a severe attack of asthma one afternoon when suffering from a cold. During this attack she was suddenly seized with severe pain in the neighbourhood of the left lower ribs, and at once sent for the doctor, who found her gravely ill. She was sitting up in a propped-up position gasping for breath, and her face was cyanosed. The heart was mostly to the right of the sternum and its action was markedly accelerated. The left chest was bulging and was tympanitic at the left apex and along the left vertebral border. The respiratory murmur was feeble on the left side, where amphoric breathing could be heard over a limited area. Recovery was rapid, and ten days later the heart had returned to its normal position and the physical signs over the left lung had returned practically to normal. About nine months later, left pneumothorax developed again during an attack of asthma and bronchitis. This time the symptoms were not so severe at the onset but the physical signs were very similar. Recovery was not so rapid, as there was still evidence of a large pneumothorax three weeks later. After three months, however, the situation was found to have returned to normal, both on clinical and on X ray examination. No evidence of pulmonary tuberculosis was found.

Case 3, a man aged 25, a scientific instrument maker, was admitted to the Royal Chest Hospital on August 11th, 1927. The history was that at 6.30 on the previous morning, he felt a sudden pain over the lower sternum and in the middle of the back, when stooping to put on his socks. He found that sitting up relieved the pain. He soon became conscious of a feeling of fullness in his right chest. This fullness extended up into the neck and gave rise to a choking sensation. Meanwhile, tenderness had become noticeable in the right lower chest. The respirations were shallow, but not increased in rate. He went to his work, but had to stop walking every few steps, as the choking sensation returned. He was comfortable when at work, unless he stooped. During the night he was comfortable when on his left side, but had pain and a sense of fullness if he moved on to his right side. On admission his condition was much the same as on the previous day. He stated that he had been the subject of a cough for some years, and that he had had diphtheria, scarlet fever, and measles in childhood. His father had died of heart trouble. He was well covered, and did not look ill. There was no cyanosis. The pulse-rate was 70, the respiration-rate 24, and the temperature 99° F. The heart was regular and not displaced, but there was an apical systolic murmur. The breath-sounds were absent over the right chest. The vocal resonance and the vocal fremitus were, however, not affected, and the coin-sound was not heard. There was hyper-resonance over the liver area, and metallic tinkling could be heard in this situation during inspiration. The left lung appeared to be normal. The abdomen was normal. On August 28th a vesicular murmur could be heard up to the second rib in front and up to the spine of the scapula behind. On Sept. 5th vesicular breath sounds were demonstrable all over the chest, but they could still be better heard on the left side; the cardiac murmur had disappeared.

The patient was discharged on Oct. 9th, the lung having completely re-expanded. He had shown no evidence of pulmonary tuberculosis, either on clinical, bacteriological, or X ray investigation; nor had emphysema been found either by clinical or X ray methods.

Case 4, a man aged 20, a chemist's assistant, was admitted to the Royal Chest Hospital on June 15th, 1928, complaining of languor, anorexia, and night sweats, dating back for some months. The symptoms became worse five weeks before admission and he had lost 1 st. in weight during the last month. His previous health had been good. His brother had a tuberculous hip. On examination he was found to be of good physique and in fair condition. The heart was normal in size, sounds, and position. Pulmonary tuberculosis was found on the right side, involving the upper half of the lung. X rays confirmed this finding, and also showed tuberculous infiltration in the left middle zone. The patient went downhill and the weight continued to drop. The temperature range was from 98° to 100°, the pulse-rate averaged 100, and the respiration-rate 20. The cough was negligible and there was hardly any sputum. Tubercle bacilli were found in a small specimen on one occasion. On July 31st a right artificial pneumothorax was induced, and refills were made at appropriate intervals until Oct. 10th. During this period a marked improvement in the patient's condition was noted. The weight, indeed, continued to fall till August 25th, reaching 10 st. 12 lb. on that date, but it had risen to 11 st. 9 lb. on Oct. 10th, when he was getting up for four hours daily. On Oct. 11th the right lung ruptured, right pneumothorax accompanied by a moderate-sized right pleural effusion resulting. The onset was sudden; a rise of temperature to 105° F. and of pulse-rate to 130, accompanied by sweating and slight pain in the right lower axilla. On Oct. 12th, 15 oz. of cloudy fluid were removed from the pleural sac. This fluid contained many tubercle bacilli and a few staphylococci, together with polymorphonuclear and mononuclear cells in equal proportion, and many eosinophil cells. There was a "staircase" fall of temperature after Oct. 11th, and the temperature became normal on Oct. 24th, when the patient felt as well as before the lung rupture, though a moderate amount of effusion remained. On Oct. 31st air replacement of the pleural fluid was performed, 30 oz. of clear greenish-yellow fluid being removed and 350 c.cm. of air admitted. The fluid contained many tubercle bacilli but fewer pus cells.

The patient subsequently went to the Royal National Hospital for Consumption at Ventnor, where he did well. Fig. I., on the Plate opposite p. 813, shows the position of the right lung when it was undergoing artificial pneumothorax treatment. Figs. II. and III. show the lung more completely collapsed, owing to spontaneous pneumothorax having supervened.

My thanks are due to Dr. L. C. Hunt and to Dr. A. W. Stott for permission to publish Cases 2 and 3 respectively, and also to Dr. P. Kerley for the X ray films, reproduction of which accompany this paper, and for the explanatory notes thereon.

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CLINICAL AND LABORATORY NOTES

RENAL CALCULUS IN INFANCY.

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UNTIL the present century urinary stone was regarded as a disease of the extremes of life, but figures collected more recently suggest that, at any rate in England and America, the optimum period is now the fifth decade. The cause for this change is difficult to determine, but it may be significant that in childhood the stone, wherever situated, has frequently a basis of urates, perhaps originating in the "infarctus uriques" described by Cless.

Thus in 1899 Comby,[1] in 600 consecutive autopsies in children, found renal lithiasis in 100. He gives some details of 48 of these. All except two were under 12 months old, and the great majority had died of acute pulmonary or gastro-intestinal disease. In 21 there was "sand" only, and in the remainder were tiny hard angular calculi, all composed of urates. In 1895 von Bokay[2] was able to collect in Hungary 1621 cases of vesicular and urethral stone in children under 15 years of age, the majority being between 3 and 4 years of age. He was concerned mainly with clinical records and not post-mortem material, and renal stone was seldom observed. In England about the same period many smaller series of vesical and urethral stone were published. Hence it may be assumed that most stones of the lower urinary tracts in children have a nucleus of primary renal origin. Indeed Thomas and Tanner,[3] in an analysis of a series of 203 cases, claim to have traced such an origin in 84 per cent.

The factor responsible for the decline in the incidence of stone in childhood may therefore be a decrease in the frequency either of the occurrence of these uric acid nuclei or of their subsequent growth in the lower urinary tracts. In the 1926 edition of "Disease of Infancy and Childhood," Holt[4] still maintains that such uric acid granules are a common post-mortem finding in America, but a personal impression is that in London they are now not so often seen. However, if there has been a decrease in their occurrence the reason is obscure, because both the "infarctus uriques" and the tiny calculi may be present at birth. The subsequent growth of the stone might be affected either by a decrease in the incidence of urinary infection or by a general change of diet in such a direction as to diminish the excretion or the concentration of mineral salts. Von Bokay[2] studied in detail the geographical distribution of his series and thought he could exclude both drinking water and climatic conditions from the ætiology.

Cases of Renal Calculus.

	Total.	Under age 10.
Swift Joly[5]	165	0
Cabot[6]	153	9
Brongersma[7]	244	2
Holland[8] (by X ray)	402	3
	964	14

"Gross" renal calculus has always been uncommon in children, in spite of the frequency with which a suitable nucleus is present. In collected cases only 14 out of 964, or about 1·5 per cent., occurred under the age of 10, and mostly in the last few years of that decade of life.

LARGE BRANCHED PHOSPHATIC STONE IN A CHILD UNDER TWO.

I am unable to trace the report of any case of the large branched phosphate or carbonate calculus typical of adult life occurring under the age of 6, at which age Hryntschak[9] and Rafin[10] each report one. Botto-Micca[11] removed from the kidney of a child, aged 7, two stones of calcium phosphate weighing 5·0 and 5·1 g., and from its bladder a urate stone weighing 46 g. Winsbury White[12] mentions Specimen No. 7347.1 in the Museum of the Royal College of Surgeons of England, a stone 1 inch long in the pelvis of a kidney removed post mortem from a child who for some time had had grossly infected urine and had died at the age of 4½ months. No analysis has been made of this stone, but its appearance suggests a phosphatic deposit on a different nucleus. Brown[13] removed a large branched stone of xanthin from the kidney and nine faceted ones from the ureter of a child aged 3. In Hill's[14] case of a child of the same age the composition is not stated but apparently it was not phosphatic, and Holt[4] gives no details of a post-mortem case to which he refers. The following case is therefore of some interest:—

The calculus (actual size).

A boy, aged 1 year and 10 months, was admitted to the Middlesex Hospital on Jan. 24th, 1930. He had always lived at Clacton-on-Sea and had been breast-fed for two months, and later fed on humanised milk. Both parents and three other children were healthy. Five weeks before admission his parents had noticed blood in his urine. This had occurred on one occasion only, and he had had no pain or frequency of micturition. They consulted Dr. P. Coleman, of Clacton-on-Sea, who ordered an X ray, which showed the shadow of a large branched calculus in the right kidney. The urine was clear and contained no pus cells.

The patient was operated upon by Mr. A. E. Webb-Johnson on Jan. 31st, 1930. The kidney was exposed by a lumbar incision and the stone removed by nephrotomy. The wound healed by first intention, and he was discharged on Feb. 24th, 1930.

The stone was found on analysis to be composed of the phosphates of calcium, magnesium, and ammonium. No urates were present. Its dimensions were 3·8 × 2·7 × 1·7 cm., and its weight was 5·1 g. when wet and 4·0 g. when dry. A photograph showing its appearance and actual size is reproduced above.

I am indebted to Mr. A. E. Webb-Johnson for permission to publish the case.

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DESICCATED HOG'S STOMACH IN PERNICIOUS ANÆMIA.

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THE following case of pernicious anæmia is interesting because the man relapsed after treatment for 18 months with liver extract, and subsequently recovered when desiccated hog's stomach (ventriculin) had been added to his diet.

The patient, a man aged 68, was first seen by me in September, 1928. His only complaint was a feeling of tiredness. A blood count gave the characteristic picture of pernicious anæmia—viz., red blood corpuscles, 1,625,000 per c.mm.; colour-index, 1·3; hæmoglobin, 42 per cent.; reticulocytes, 1·4 per cent.; and white blood corpuscles, 5500 per c.mm. There was considerable poikilocytosis, anisocytosis, and polychromatophilia. One normoblast was seen while counting 200 white cells.

He responded well to treatment by liver extract, and in December, 1928, the blood count was: red blood corpuscles, 3,268,000 per c.mm.; colour-index, 1·04; hæmoglobin, 68 per cent.; white blood corpuscles, 6900; some poikilocytosis and aniscytosis, but no other changes.

He remained in good health throughout 1929, and was able to lead a normal life. Periodical blood counts always showed the red cells between three and four million.

In March, 1930, he began to have a return of his original symptom—tiredness—and loss of appetite. When in health he had a very florid complexion, but this had largely disappeared, and there was a distinct icteric tinge of the conjunctivæ. His blood picture on April 15th, 1930, was very similar to the first one taken: red blood corpuscles, 1,700,000 per c.mm.; colour-index, 1·3; hæmoglobin, 66 per cent.; white blood corpuscles, 12,000 per c.mm.[1]

He was given the contents of one vial of ventriculin (Parke, Davis & Co.) and 1 ounce of Armour's liquid liver extract a day. The result was rapid and dramatic. Within a week a sense of well-being had returned and the icteric tinge in the conjunctivæ had disappeared. The blood count on May 21st, 1930, was: red blood corpuscles, 4,400,000 per c.mm.; colour-index, 0·8; hæmoglobin, 72 per cent.; white blood corpuscles, 10,200 per c.mm.; slight poikilocytosis and anisocytosis.

For the past three months he has remained in excellent health, and, although he celebrates his seventieth birthday in August, has the vitality and appearance of a man ten years his junior.

I should like to acknowledge the assistance of Dr. H. A. Fielden, hon. pathologist to the Torbay Hospital, who kindly did the blood counts for me.

A CASE OF IMPENDING ISCHÆMIC CONTRACTURE.

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Volkmann's ischæmic contracture is due to an anoxæmia of the muscle tissue. This may follow the occlusion of the main artery in the proximal segment of a limb[2]; but in the upper extremity, owing to the abundant collateral circulation, it is extremely rare for this to be the sole factor in the production of a Volkmann's contracture. On the other hand, obstruction to the venous return will produce that degree of anoxæmia which is required for the rapid onset of an ischæmic contracture.[3] This venous obstruction may be due to external pressure; the danger of a tight splint or bandage in supracondylar or forearm fractures is well known. But venous obstruction may occur independent of external pressure from a subfascial effusion, especially in the arm of a child, where there is less space to accommodate any effusion. Subfascial laceration with, possibly, the tearing of a small artery at the time of injury or bruising of the forearm muscles during reduction of the fracture, will produce the subfascial effusion, and acute flexion of the elbow will help still further to embarrass the circulation.

The case here described presented the classical signs of an impending ischæmic contracture—namely, a supracondylar fracture occurring in a child between the ages of 5 and 13, a brawny induration in the arm which was gradually increasing, persistent severe pain, cyanosis of the hand, and limited voluntary flexion of the fingers.

The patient, a girl aged 9, was jumping a tennis net when she caught her foot in it and fell on her left hand. I saw her 15 minutes after the accident. There was an obvious fracture at the lower end of the left humerus, with considerable backward displacement of the lower fragment. The skin was intact, but no radial pulse could be felt at the wrist.

Condition after the accident.—After two hours the fracture was reduced under a general anæsthetic. The region of the elbow felt brawny. No crepitus could be felt as the fracture was reduced, suggesting that other tissues were intervening between the broken ends of the bone. There was still no radial pulse, though the deformity was completely reduced. The elbow was flexed to slightly beyond a right angle, and fixed to the front of the chest with strapping.

After six hours the arm had become very painful. The induration was more extensive and harder, and because of the increase in induration and pain the strapping was removed and the flexion of the elbow diminished.

After eight hours the arm had become still more painful. The induration had increased, extending from the middle of the arm to the middle of the forearm. The indurated area was now tense and swollen, with the skin so tightly stretched that ordinary pressure had no effect.

After ten hours it appeared as if gangrene would ensue. The pain had diminished in no degree; the hand and forearm were cold to the touch; the skin had a dusky bluish appearance; blebs were forming, and the whole limb was swollen from the shoulder to the fingers. The fingers and wrist had remained straight; she was still able to flex the fingers very slightly. It was noted for the first time that there was anæsthesia of the volar surface of the index-finger. In view of these observations it was decided that some operative interference was necessary.

After exactly *11 hours* a 4-inch longitudinal incision was made on the medial side of the front of the elbow-joint. The skin was so tight that it appeared to split apart in front of the knife. The incision was continued through the deep fascia, which was as tightly stretched as the skin. A quantity of dark red fluid welled up from the incision, and after this fluid had been wiped away a small spurting artery, probably the anterior ulnar recurrent, was found in the depth of the wound and ligatured. The fracture was inspected, and the position of the fragments seemed to be satisfactory.

An examination of the median nerve and brachial artery was now possible. Distal to the elbow the artery was difficult to identify, owing to its great constriction, but on tracing it upwards both median nerve and brachial artery were seen to be nipped between the surfaces of the fracture. The fragments were gently levered apart and the artery and nerve released. The artery was intact, and the pulse returned at the wrist; the nerve was flattened but did not appear to be torn. The margins of the incision could not be drawn together, and a gap of 1 inch remained.

Subsequent progress.—During the first week after the operation the child ran an irregular temperature, occasionally reaching 101° F., and since no signs of infection developed it was assumed that the temperature was due to the absorption of blood-clot. The induration in the arm disappeared within three days, and in ten days the limb had returned to its normal size. At no time did the fingers or wrist show any contracture. Voluntary movements of the little and ring-fingers were always of normal extent. Voluntary flexion was limited in the middle finger and absent in the index-finger. There was wasting and paralysis of the flexor and abductor pollicis brevis and anæsthesia of the volar surface of the index-finger.

[1] Patient had a cold, followed by bronchitis, which, I think, explains the increase in the white cell count.

[2] Makins, G. H.: On Gunshot Injuries of the Blood Vessels. London, 1919.

[3] Brooks, Barnley: Arch. Surg., 1922, v., 188.

The discharge from the wound was serous, and so copious that it soaked through all the dressings. The wound remained non-infected, granulated slowly, and at the end of seven weeks was covered with skin.

The events leading up to the operation and the facts disclosed by it directed the subsequent treatment to the vascular and nervous lesions. The limb was allowed to rest on a pillow in slight flexion. A late X ray showed some posterior displacement of the lower fragment. No special efforts have been made to remedy this.

Condition after three months.—The movements began to return after three months of complete fixation at 80° flexion. All the muscles of the arm were functioning normally; the flexion and extension of the fingers was normal, and the thenar muscles had recovered. There was slight anæsthesia on the volar surface of the index-finger.

After six months the median nerve had completely recovered. There was about 30° of movement in the elbow-joint.

After 12 months the range of movement has been gradually increasing, and is now about 50°. There is full pronation and supination, and the child uses her arm as she would if it were normal.

Many writers have briefly referred to the prophylactic treatment of this condition by early incision of the deep fascia, but unfortunately there are very few recorded cases where this has been carried out.

To prevent this calamity, the possibility of its occurrence after injuries to the elbow or forearm must be borne in mind, and it is to be suspected if there is severe persisting pain. The best results are obtained from operations performed within the first 12 hours; if interference is delayed for more than 24 hours complete recovery is very unlikely. The incision should be 3 to 4 inches long over the area of greatest tension, and the deep fascia must be divided to expose the muscles.

Mr. W. Rowley Bristow kindly saw this case in consultation with me and performed the operation.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 746.*)

SECTION OF ANÆSTHESIA.

AT the third meeting of this Section Dr. H. W. FEATHERSTONE (Birmingham), Vice-President, occupied the chair, and a paper on

Avertin

was read by Dr. F. B. PARSONS (Cambridge). Non-volatile anæsthetics, he said, had not attained such popularity as volatile inhalation anæsthetics because the depth and duration of anæsthesia could not be controlled so easily. As a general rule, non-volatile anæsthetics were solid fat-soluble substances which were absorbed and, in particular, excreted comparatively slowly. Dosage was unsatisfactory and the best method available was to give a certain proportion of the drug per unit of body-weight of the patient.

Avertin, or tri-brom-ethyl-alcohol, was an odourless white crystalline powder containing 85 per cent. of bromine. The powder itself was comparatively insoluble in water, but if it was first dissolved in amylene hydrate an aqueous solution could be prepared easily. Freshly prepared solutions of avertin were non-irritating to the rectal mucosa, but, as decomposition readily occurred, it was essential to test the solution before administration by means of Congo-red. The dose of the drug had been stabilised at 0·1 g. per kg. of body-weight, and this was regarded as perfectly safe. This dose produced anæsthesia in 30 per cent. of cases and the other 70 per cent. required the addition of a small amount of volatile inhalation anæsthetic.

Some authorities had employed premedicaments before the administration of avertin, but on account of the depressant action of the drug upon respiration it was inadvisable to use morphine in this connexion. Induction was very pleasant for the patient; it was associated with a sensation of sleepiness and was unaccompanied by struggling. Unconsciousness occurred after about 15 minutes in man, the blood pressure fell very little—10 to 20 mm. Hg. Dr. Parsons believed this was due to a central cardiac effect and not to dilatation of peripheral blood-vessels as was thought in some quarters. The drug had very little action upon the heart; in this respect it was about 16 times safer than chloroform. Respiration was markedly slowed, and with toxic doses death occurred from failure of this function. There was marked muscular relaxation. Anæsthesia usually persisted one and a half hours and was followed by a deep sleep lasting several hours. Avertin acted as an analgesic and as an amnesic after operation. It was absorbed very rapidly by the rectal mucosa; it was detoxicated by the liver and its breakdown products were excreted almost exclusively in the urine over a period of several days. There was no satisfactory method of interrupting avertin anæsthesia, but it had been suggested that thyroxine was useful in this connexion.

Dr. Parsons regarded avertin as preferable to other rectal anæsthetics, because, when carefully prepared, it did not irritate the rectal mucosa. The drug, however, possessed serious drawbacks concerned with detoxication and elimination, and it had been calculated that its intrinsic mortality-rate was equal to that of chloroform. It should not be employed when there was disease of the liver, kidney, or rectum, or when there was interference with respiration. It was, however, of value for those undergoing operations for exophthalmic goitre; psychic distress was minimised, there was the least possible action upon the heart, and the excess of thyroxine in this disease hastened detoxication. Its use was generally unaccompanied by post-operative sickness. In conclusion, Dr. Parsons said he considered avertin the best of the non-volatile anæsthetics available, but it should be regarded, however, as a particular form of premedicament rather than as an anæsthetic.

DR. J. S. LUNDY (Rochester, Minn.) said that the figures for the intrinsic death-rate of avertin only applied to the first 30,000 cases reported in the literature. It was conceivable that, in the future, with improved technique and better appreciation of the properties of avertin, the mortality would be considerably less. He was now using a 6 per cent. solution of gum acacia instead of distilled water as a solvent with, he considered, better results.

DR. R. WATERS (Madison, Wis.) detailed his experiences with the intravenous administration of avertin. The injection was given quickly and the effect was instantaneous. Anæsthesia, however, only lasted ten minutes.

The CHAIRMAN had used avertin, and the impression left on his mind was that the chief use of the drug was for induction. He regarded the ether test for depth of anæsthesia, referred to by Dr. Parsons, as too severe, and felt that he liked the patient to show a response to an inhalation of strong ether vapour. Although anæsthesia was light during the recovery period, there was muscular relaxation and it was necessary to support the jaw. Even with the greatest

care in preparation he had had cases of rectal irritation. He inquired if Dr. Parsons could give any information concerning the keeping qualities of the solution of avertin in amylene hydrate. Dr. E. C. HAYES (Christchurch, N.Z.) asked if avertin could be used for young children, while Dr. S. JOHNSTON (Toronto) questioned the value of the drug for nose and throat operations on account of delayed return of the cough reflex. Dr. M. E. BOTSFORD (San Francisco) concluded that the barbiturates—for example, sodium amytal—were of more use than avertin. With the latter drug, patients did not regain their normal mental outlook for some days. The fact that avertin should not be administered by a nurse was a practical difficulty.

In reply, Dr. PARSONS stated that the solution in amylene hydrate kept indefinitely. He himself questioned the advisability of avertin anæsthesia for nose and throat operations. There was no reason why the drug should not be given to young children.

Pernocton.

Dr. E. I. MCKESSON (Toledo, Ohio) read a paper on Pernocton. This drug, he said, was designed to remove all the psychic element from induction and, in ordinary doses, to have a large margin of safety. It should not be used to produce full surgical surgical anæsthesia; this should be attained by the superimposition of a volatile anæsthetic. The drug was given intravenously, for this route was subject to better control.

Pernocton was the sodium salt of secondary butyl beta-bromallyl barbituric acid and, chemically, it was related to sodium amytal. The average dose necessary to produce unconsciousness was grs 4½. Narcosis was accompanied by an average fall of blood pressure of 14 per cent., and weight for weight pernocton was twice as powerful as sodium amytal. The post-operative recovery period was comparatively short and was characterised by drowsiness and amnesia. He had not observed the restlessness frequently seen following the administration of sodium amytal. In some cases there had been post-operative vomiting and he was inclined to attribute this to undue taste in making the intravenous injection. Pernocton was given in a 10 per cent. solution in the proportion of 1 c.cm. to every 30 lb. of body-weight. Not more than 1 c.cm. of the solution should be given per minute.

Dr. McKesson concluded by saying that pernocton had the following advantages over sodium amytal: (1) there was almost complete absence of excitement during the recovery period; (2) there was no fall in blood pressure; (3) pernocton had a more powerful hypnotic effect; (4) the solution was issued ready for injection; (5) there was a smaller volume to be injected; (6) there was a shorter period of unconsciousness.

Prof. W. WEBSTER (Winnipeg) questioned the advisability of giving "shot-gun" anæsthetics. Patients frequently received morphine, hyoscine, pernocton, or avertin, followed by N_2O or ethylene, and perhaps ether in addition.

Dr. R. HARGRAVE (Toronto) asked the value of pernocton in obstetrics.

Dr. MCKESSON, in reply, said that, in the attempt to obtain balanced anæsthesia, we had come to rely more and more upon the multiplication of anæsthetic agents. He was unable to give a considered opinion about the value of pernocton in obstetrics. The drug was in close chemical relation to sodium amytal.

SECTIONS OF PUBLIC HEALTH AND TUBERCULOSIS.

AT a joint meeting of these two sections, Prof. S. LYLE CUMMINS (Cardiff) opened a discussion on

Primitive Races and Epidemiology

with a paper on Tuberculosis in African Natives, when brought into contact with Civilisation. In 1927, he said, he joined the South African Tuberculosis Research Committee in an inquiry into the disease as met with in

NATIVE MINE-WORKERS ON THE RAND,

with especial reference to the question whether mining on the Witwatersrand was a phthisis-producing industry because conditions favoured the lighting-up of old foci or because they rendered possible infections from without that would not occur apart from such conditions. Careful tuberculin tests showed that, contrary to expectation, about 80 per cent. of the Rand workers gave positive reactions, so that they were obviously not dealing with tuberculosis in virgin soil. The clinical types of tuberculosis met with in the Mine Hospitals of the Rand fell into two categories: the acute fatal cases, and the more chronic cases which were in a fit state to be repatriated. Most of the fatal cases occurred in the younger men, and were apt to occur soon after their arrival in the Rand.

The evidence all tended to show that most of the acute tuberculosis of natives on the Rand was due to the lighting up of old foci rather than to infection from without acquired for the first time in the course of mining work. The foci were not necessarily very old; indeed, the older the foci, the smaller the probability of their lighting up. It was the young mine recruit, arriving with larval or childhood lesions still active in the tracheo-bronchial and other glands who was in danger of acute generalisation of his infection when exposed to the combination of unfavourable physiological conditions implied in the exchange of the native way of life for life and work in the mines of the Rand. The lesions found at post-mortem were such as could only be produced by generalisation through the blood stream from a pre-existing lesion. Prof. Cummins here showed a number of lantern slides, illustrating some of the types of lesion seen in African natives. In these young mine recruits health and working capacity were maintained until under the physiological stress from the new conditions encountered, the young men with active larval lesions suddenly sickened and rapidly went downhill.

Under these circumstances nothing, said Prof. Cummins, could be expected from any form of prophylactic vaccine administered on arrival at the mines. Something might be accomplished in the future by immunising processes applied in infancy or childhood, but at present this was impracticable, and all that would be possible for a long time to come was to endeavour to improve the environmental conditions of the mine natives. The women and children of the Rand, if they developed the disease at all, exhibited, as a rule, a much more benign type of illness. The essential first step in prophylaxis consisted in affording to the natives in their territories conditions of life which ensured good nourishment, and in building up a sound medical service.

POST-MORTEM EVIDENCE.

Dr. J. HARVEY PIRIE (Johannesburg), who followed, based his remarks on a series of over 700 post-mortem examinations on natives working in the gold mines of Witwatersrand. The total number of deaths on

the reef were 1200 a year, with or without silicosis, while five or six times this number were repatriated. The fate of these latter was not known with certainty though no doubt many of them died within a short time. In one-third of those examined the tuberculosis was complicated by silicosis, all these cases being in long-service natives, showing that although silicosis might predispose to tuberculosis it did at the same time appear to render it a chronic disease. Two-thirds of the cases were of uncomplicated tuberculosis in young men in their twenties, with very short service. In them tuberculosis was predominantly an acute generalised disease. Age per se was evidently not a predisposing factor, since the same type was also seen in men of 40 and 50 years. A large proportion of these cases died within their first three months of service. Acute cases were usually T.B.+, contrary to expectation. The route of invasion was overwhelmingly respiratory. Bacteriological examination showed a complete absence of the bovine type of bacillus. A striking feature was the early generalisation of tuberculosis, sometimes as generalised miliary tuberculosis in which it was occasionally difficult to find the source of the spread. The glands sometimes showed extensive laxation, but were more often hyperplasic. The spread from thorax to abdomen was by the lymphatic paths, as was clearly seen by the pigmentation in men who had worked for some time in the mines. It was very common to find gross lesions involving liver and spleen. The kidneys were less often and less severely affected. In the lungs the lesions most commonly seen were of a broncho-pneumonic type, usually from the breaking down of caseous glands. A few cases were found with healed scar tissue, and a few with chronic fibro-caseous lesions; it was probable, however, that a few more cases of this type would be found among repatriated men. Calcified foci were found, but were such as would have been missed even on careful post-mortem examination in the absence of preliminary X ray evidence of their existence.

LABORATORY EVIDENCE.

Prof. J. G. FITZGERALD (Toronto), speaking on Laboratory Evidence as an aid in early recognition of Tuberculosis in Contacts, said that the laboratory procedures to which he wished to direct their attention and which might be of value in diagnosis were the tuberculin complement-fixation test and Caulfield's inhibitive test. These methods, though valuable, had definite limitations in that they could only be used where adequate laboratory facilities were available, and where there were opportunities for repeated and continuous examination of the blood of contacts under suspicion. A large number of cases that were negative clinically were shown under these tests to be suffering from tuberculous disease. The fact that positive serological findings were well in advance of clinical symptoms made diagnosis possible at a much earlier period. Three to eight tests might be necessary over a period of four or five years. Only trained and skilled workers were competent to carry out the tests. Attention was drawn both to the work done at Christie Street Hospital, Toronto, in correlating the results of the serological findings with post-mortem findings, and to the high proportion of cases in which these findings agreed.

RACIAL INCIDENCE IN BRITISH COLUMBIA.

Dr. C. H. VROOMAN (Vancouver) said that about 70,000 of the total population of 600,000 in British Columbia was about equally divided between Indians, Japanese, and Chinese, and that vital statistics for the last nine years showed that this small section of the population was responsible for nearly 40 per cent. of the total deaths from tuberculosis. Among the white population the rate of deaths due to tuberculosis was one out of every thirteen; among the Japanese one out of every six; among the Chinese, one out of five; among the Indians, one out of three. This striking difference raised the question of a racial susceptibility to tuberculosis, and in order to answer it a survey was begun of the Indians of British Columbia, under the direction of Prof. H. W. Hill, of the University of British Columbia, the clinical portion of the survey being the responsibility of the speaker. Dr. Vrooman gave the following clinical conclusions arrived at from the study. The incidence of active pulmonary tuberculosis among the Indians of British Columbia amounted to at least 6 per cent. of the population; if to this were added the suspects and the active non-pulmonary cases the incidence would be at least 10 per cent.

Tuberculosis tended to appear at a much earlier age among the Indians than among the whites, pulmonary tuberculosis being a common disease among the Indian children between the ages of 5 and 14. Climate had no relation to the incidence of Indian tuberculosis, nor did the cases show any more tendency to heal in the dry climate of the interior than in the wet climate of the coast.

While with the Indian tuberculosis was a comparatively new disease, with the Japanese and the Chinese the susceptibles should have been weeded out long ago. The higher incidence of tuberculosis among these races than among the whites might be partly accounted for by the fact that they lived in more crowded quarters and were much less careful in their sanitary habits. More data were required to decide how far the problem was also a racial one. Dr. Vrooman's general tentative conclusions, however, were that, owing to the method of living and lack of sanitary care, the Indians, Chinese, and Japanese were exposed, especially in childhood, to more massive doses of tubercle bacilli than were the white population, but that neither massive infection nor economic conditions altogether accounted for the excessive incidence of tuberculosis among these races as compared with the whites. There seemed to be a definitely greater racial susceptibility to tuberculosis among these races as compared with the white race.

DISCUSSION.

Dr. R. G. FERGUSON, Dr. A. S. M. MACGREGOR Dr. HARRIS, and Dr. D. A. STEWART took part in the discussion. In reply, Prof. CUMMINS again emphasised the bad effects of breaking away from accustomed modes of life. Racial factors did tell, and young natives brought into industry would be liable to break down. If a hereditary factor entered into the question it appeared to him more likely that what was transmitted was not immunity or resistance as such, but rather the power of rapidly developing an increased resistance in the presence of infection.

Antituberculosis Schemes.

Discussion was opened by Dr. MACGREGOR (Glasgow) with a paper on General Antituberculosis Schemes. He pointed out how greatly antituberculosis campaigns had stimulated general public health measures for the common welfare, and had helped to direct the broad policy of preventive medicine along its present channels. Discussing some of the administrative measures in operation for reducing sickness and death due to tuberculosis, Dr. Macgregor said that the tuberculosis dispensary

was most efficient when closely related to, or forming an outpost of, a public health organisation. In cities such as Glasgow where much chronic respiratory disease existed the differential diagnosis of chest affections became an important and often difficult duty, with the result that tuberculosis dispensaries tended to become centres for the diagnosis and treatment of a variety of chronic diseases of the lungs. As effective instruments of detection these clinics were confronted with great difficulties in tracking down incipient tuberculosis. Protection of the contact was not so simple a matter as had at one time been believed. The results as regarded early diagnosis and treatment in the more acute type of phthisis prevailing among young adults were disappointing, the type of disease still tending to be advanced when detected, and efforts to control it being defeated by its natural history. This persistence of young adult phthisis constituted a problem for special investigation. Institutional provision took the form of sanatorium or hospital, or of both combined, the relative proportion of each varying according to the circumstances of the area and especially its housing conditions.

Under the housing conditions prevailing in Glasgow domiciliary treatment, said Dr. Macgregor, became an impossibility, and the preventive problem had to be faced on lines of generous provision for highly infective patients. The behaviour of phthisis under conditions of overcrowding such as prevailed in parts of Glasgow illustrated the powerful nature of the protective forces at work. Administration, broadly speaking, proceeded on the principle of providing suitable care and treatment for the affected individual, preventing as far as possible massive infection of contacts and improving housing and other environment. Dr. Macgregor drew attention to the remarkable fall in phthisis at later ages which had taken place in both sexes but especially among women, although tuberculosis as an acute infection of young adults had remained practically unaffected. Non-pulmonary tuberculosis, whether from bovine or from human infection, had declined at a still more accelerated pace. It was noteworthy that the greatest fall had taken place in abdominal tuberculosis, and since these cases were mostly bovine in origin, it was probable that the greatly increased practice of pasteurisation of ordinary city milk was responsible for some degree of protection against transmission of this form of tuberculous infection.

CAMPAIGN IN QUEBEC.

In a paper read by title, Dr. J. A. BAUDOIN (Montreal) gave a number of statistics from the year 1912 to show the necessity for the antituberculosis campaign in the Province of Quebec. Two-thirds of the tuberculosis deaths occurred in the important 15–24 age-group, pulmonary tuberculosis claiming 84 per cent. of the total deaths from tuberculosis. The campaign carried out in the province included antituberculosis clinics, which chronologically were the first organised weapons in the campaign, and of which there would be 20 by the end of the present year; hospitals, including sanatoriums, giving nearly 1600 beds, which, however, were only half the number needed in view of 3000 tuberculosis deaths; Grancher's system which had been in operation since September, 1929; summer camps—many of which worked in coöperation with the school medical service—where thousands of children spent an average of three weeks; and B C G vaccine. This last work was initiated in Quebec in 1926, the vaccine being prepared at the bacteriological laboratory of the University of Montreal. A follow-up report of as many vaccinated children as could be traced showed that the total tuberculosis death-rate among the vaccinated new-born babies in contact either with persons having positive sputum, or with clinically active or suspected cases of tuberculosis was 3·4 per cent., as compared with 25 per cent. found in similar control groups of unvaccinated babies in France and Roumania. Over 1000 new-born babies had been vaccinated, no reaction or ill-effects following in any case.

CANADIAN TUBERCULOSIS ASSOCIATION.

Dr. R. E. WODEHOUSE (Secretary of the Association) said that in Canada they had no counterpart of the British uniform arrangement. Their five cardinal activities were: educational activities, institutional care of the tuberculous; chest diagnosis; home visiting nurses; after-care. The field work in regard to tuberculosis in Canada was in the direct charge of the Provincial Department of Health and the municipal authorities in the different provinces. On the other hand, the institutional care of the tuberculous for most of the population was under the direction of other than Governmental departments, aided by standard or statutory contributions from the provincial Government in the case of the indigent. With a few exceptions the chest diagnostic work, as far as civilians were concerned, was carried on through reference by the practising physicians to the travelling diagnostic clinics, usually staffed by ex-sanatorium personnel. The follow-up or home visiting nursing services and the school medical inspection were not available uniformly over Canada, nor were they always adequate for the need. With regard to after-care or village settlements they were at present marking time in Canada with a view to copying the most useful and economic practice evolved elsewhere. Among the more exceptional activities carried out or contemplated by the Association were: the stimulation of routine examination of presumably well school-children; the furthering of study schemes relating to the care of North American Indians; the organisation, in conjunction with the University of McGill, of a study of 5000 employees in five types of employment; the provision of a complete public health service for the entire population of Prince Edward Island; and a proposal to take 50 full-time medical officers of health to Europe.

SECTION OF MENTAL DISEASES AND NEUROLOGY.

Dr. A. T. MATHERS (Winnipeg) being in the chair, a discussion on the classification of

Brain Tumours

and its practical application was opened by Prof. WILDER PENFIELD (Montreal). The surgery of brain tumours formed, he said, only a small part of the work of a neuro-surgeon, and any classification of them should lend itself to a practical application. The classification he had adopted was combined work of many people. It provided a basis for prognosis, treatment, and analysis. Prof. Penfield then outlined some of the work done which had led up to the fairly wide adoption of the classification of gliomata with which the names of Bailey and Cushing were associated. Gliomata, he said, were first described by Virchow. Horsley gathered over 500 verified specimens upon which Tooth did his work, of correlating microscopic pictures with degree of malignancy. Roussey and his associates attempted a classification in 1924. Bailey and Cushing published

the results of their investigations in 1926 in which they pointed out the possibility of prognosis by microscopic classification. After showing diagrammatic drawings of various cells, with photographs of ventriculograms and encephalograms obtained from his own clinic, Prof. Penfield outlined the various classes of glioma given and described the characteristics of each. Following are the seven types of glioma which might be differentiated :—

1. Neuroepithelioma.
2. Spongioblastoma multiforme.
3. Medulloblastoma.
4. Oligodendroglioma.
5. Polar spongioblastoma.
6. Astrocytoma.
7. Ependymoma.

He went on to discuss tumours of the sheaths of the nervous system, these including meningeal, fibroblastoma, perineural fibroblastoma, and neurofibroma or of von Recklinghausen's disease, describing cases of each which he had treated. When surgical intervention was considered necessary, he favoured radical procedures.

Dr. HENRY WALTMANN (Rochester, Minn.) remarked that interest in a disease followed the development of successful therapy. In the treatment of tumours of the brain the great necessity was accurate pathological diagnosis at the operating table. He discussed the resistance of the host to malignant growth, and asked Prof. Penfield whether he thought that brain tumour was likely to follow injury to the head.

Sir JAMES PURVES-STEWART (London) reminded his hearers that before the days of Horsley the mortality from brain tumours was 100 per cent. He stressed the importance of structural as well as focal diagnosis and advocated the wider use of ventriculography and encephalography for diagnosis.

Dr. A. W. ADSON (Rochester) said that rapid microscopic diagnosis was coming into neuro-surgery as it had come into general surgery. He agreed with Prof. Penfield on the importance of simplifying classification of the gliomatas. His own attitude to intracranial surgery was more conservative than that of Prof. Penfield; he removed encapsulated tumours only provided he felt sure that the patient was going to be benefited thereby.

Prof. WILLIAM BOYD (Winnipeg) spoke of the value of newer methods of preparation of tissue for microscopic diagnosis. He felt that while these methods were not of practical value at present, they would undoubtedly lead to simpler and more rapid means of differentiation in the future. Hydrocephalus, he said, might be the result of relatively small tumours of the cortex; was it due to pressure downwards and consequent narrowing of the aqueduct, or to pushing of the brain to one side and consequent pressure on the great vein of Galen? He thought that Bailey and Cushing had not emphasised sufficiently the mixed microscopic picture frequently met with in gliomata.

REPLY.

Prof. PENFIELD said that in spongioblastoma multiforme the vessels showed typical changes in the vicinity before the tumour cells could be seen. He thought that encephalography was to be avoided where a lesion in the posterior fossa was suspected; ventriculography, too, was a dangerous diagnostic weapon. Operation should be performed as soon after ventriculography as possible. One of the reasons he preferred ventriculography to encephalography was because the entrance of the ventricular needle into the brain frequently gave valuable information. He emphasised the necessity of competent interpretation of ventriculograms. He felt that the operative approach to tumours of the brain—conservative or radical—was still an open question. He agreed with Prof. Boyd that hæmatoxylin and eosin, and Mallory's phosphotungstic acid methods were the most practical. While unable to explain the production of hydrocephalus in the cases Prof. Boyd had mentioned, he had observed that a decompression not over the tumour site did not reduce the hydrocephalus, but resulted in destruction of tissue between the decompression and the ventricle.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT the second session of this Section Prof. D. S. MACKAY (Winnipeg) took the chair, and a paper entitled

Albuminuria of Pregnancy and its Late Results

was read by Mr. J. BRIGHT BANISTER (London). Albuminuria, he said, was the commonest abnormality in pregnancy and labour. In a series of 6000 cases of pregnancy which he had investigated he found that some 30 per cent. suffered from albuminuria, but this was usually transient. Comparatively little was known about the subject, because after-histories were apt to be incomplete. All investigators should cover a period of at least five years, and the collaboration of a general physician should always be obtained in treating a case of albuminuria after delivery. Cases might be classified, as suggested by Dr. Standen, into: (1) those in which there is albuminuria with vomiting in pregnancy; (2) those with a low kidney reserve; (3) frank nephritis complicating pregnancy; (4) pre-eclampsia; (5) eclampsia. In approaching the subject Mr. Banister set himself the following questions: Is a patient who develops albuminuria likely to suffer from a recurrent attack in a subsequent pregnancy? Is a patient with chronic nephritis likely to suffer from progressive deterioration of kidney function during a future pregnancy? Does eclampsia recur in subsequent pregnancy? What rôle does albuminuria of pregnancy occupy in the ætiology of chronic nephritis? He investigated the records of 30,000 cases of pregnancy in various London hospitals and found 1700 of them required some treatment during pregnancy, and in 86 of these albuminuria recurred more or less severely in subsequent pregnancies. The variety of the conditions from which these patients suffered was sufficient to preclude any precise conclusions, but he had arrived at certain general deductions to answer his questions. He did not believe that a patient developing albuminuria in one pregnancy was particularly liable to a similar complication in a subsequent gestation. In cases with low kidney reserve and chronic nephritis the condition was aggravated by subsequent pregnancy. He thought that some 30 per cent. of cases of pre-eclampsia and eclampsia suffered from toxic condition in a subsequent pregnancy. The shorter the time that the albuminuria persisted the smaller the risk of this complication afterwards. In considering the course which a subsequent pregnancy would take a raised blood pressure was the cardinal sign. Where the blood pressure was up to 150 mm. for any length of time, then permanent damage was indicated and likely to cause trouble later. In tracing the future of these cases and preventing, if possible, recurrences, early diagnosis and early and thorough treatment were essential. The treatment should not be carried on medically for too long, and should recovery not be noted in (say) seven days, then radical treatment should be started. He felt that Cæsarean section might have a scope in the treatment

of the severe toxæmias of recent origin. Mr. Banister concluded by stating that in the light of present knowledge it was impossible to give an answer to the question what was the rôle of albuminuria of pregnancy in the ætiology of chronic nephritis.

Prof. O. BJORNSON (Winnipeg) thought that early emptying of the uterus was indicated in cases which did not rapidly respond to treatment.

Dr. J. HOLLENBERG (Winnipeg) asked for Mr. Banister's experience of the value of Stroganoff's treatment.

Dr. J. E. STACEY (Sheffield) agreed with Mr. Banister about the significance of raised blood pressure. He said he examined the blood pressure regularly in every antenatal case, and had found that cases with blood pressure of more than 130 mm. tended to show signs of toxæmia in later months. He thought there was a definite relationship between albuminuria and antepartum hæmorrhage in subsequent pregnancies. In an investigation of 500 cases of antepartum hæmorrhage he had found that 37 per cent. of women subsequently pregnant developed toxæmic symptoms. They usually had a raised blood pressure. These cases were often associated with confusional states or even mania. Sepsis was very commonly associated with albuminuria. He did not agree that induction should be done at seven days; this was too early.

Prof. H. BERGLUND (Minnesota) said he only induced labour where there was deterioration of the patient's condition or a persistence of high blood pressure for six or seven weeks. He had had a few patients whose albuminuria was eliminated during pregnancy, but who died a few months later from puræmia. He had also known patients with progressive nephritis which began in pregnancy who had lived for many years. He felt that repeated pregnancies led to progressive damage of the kidneys.

Dr. T. G. STEVENS (London) was in general agreement that pregnancy should be terminated when reaction to treatment was slow. He strongly deprecated Cæsarean section in the treatment of this condition.

Dr. M. BASDEN (London) said she had performed Cæsarean section in a number of cases of severe toxæmia—never in eclampsia—with good results and with no maternal deaths.

Mr. COMYNS BERKELEY (President of the Section) recalled that Kellogg gave the name "recurrent toxæmia of pregnancy" to those cases which gave no clinical manifestations of chronic nephritis when not pregnant, and thought that 8 to 15 per cent. of pregnancy toxæmias belonged to this group. Kellogg believed these cases might turn out to be those of a faulty renal balance, in which renal insufficiency developed under the added load of pregnancy. Stander and Beckham had described a group which appeared to be the same and which they called low reserve kidney. Young agreed with Kellogg that women with a toxæmic history had resident within their body some morbid influence—an *x* factor—not inconsistent with good health when not pregnant, but inconsistent with the normal continuance of pregnancy to term because of the placental damage which he regarded as the cause of eclampsia. Young thought this *x* factor might be of an infective nature—e.g., chronic endometritis, metritis in primiparæ. Gibberd did not agree with these views. He found that in 13 per cent. of patients who had had at least two pregnancies, all of whom had healthy kidneys, signs of renal damage persisted for a year or longer after the termination. These, therefore, had become chronic nephritics. The average time between the first notice of albuminuria and the termination of pregnancy was nine weeks.

"We believe," said the President, "that we have obtained evidence showing that in cases in which toxæmia occurs in successive pregnancies there is really in all a pre-existing chronic renal damage not detected by the ordinary methods of clinical examination."

Dr. S. KROPINSKI (Winnipeg) thought that induction should not be resorted to too early, since in many cases the condition continued subsequently.

Mr. BANISTER, in reply, denied that he had recommended Cæsarean section in treatment, and said he would not suggest anything detrimental to safety of the patient in obstetrics. He would only consider Cæsarean section in fulminating eclampsia, and he thought the operation was overdone throughout the world. He did not think it justifiable to lay down a course of treatment, for the treatment of every case should be based on the clinical examination. If there was no improvement in seven days induction should be carried out, but, on the other hand, if there was any improvement at all it might continue. He was impressed by Stroganoff's treatment, but was a little afraid of the chloroform anæsthesia.

Hypertonic Saline in Toxæmia.

Prof. V. J. Harding (Toronto) read a paper on the Effects of Hypertonic Saline in the Toxæmias of Later Pregnancy. He had previously shown, he said, that in the treatment of eclampsia the limitation of salt was the essential factor rather than the withdrawal of protein and fat from the diet. High protein and fat diets were not only innocuous but actually beneficial, provided they were salt-free or salt-poor. The salt-free treatment of parenchymatous nephritis was well known, and the deleterious effect of sodium chloride and sodium bicarbonate had been demonstrated clinically and experimentally. Recently a tendency to the use of dehydrating agents, such as magnesium sulphate and ammonium chloride, had suggested that hypertonic saline might improve pregnancy toxæmia. A series of four cases was treated with hypertonic saline. One was a normal case as a control; the second case was a mild toxæmia of doubtful origin; the third and fourth were definite pregnancy toxæmias. Two well-defined criteria for estimating the extent of a toxæmia of later pregnancy were raised blood pressure and albuminuria. In the first two cases the injection of 300 c.cm. of 10 per cent. saline gave rise to some thirst and vomiting, but no increase in blood pressure or albuminuria. In cases 3 and 4, however, there was a well-marked rise in blood pressure, and the amount of albumin in the fourth case caused the recurrence of convulsions which had previously subsided under Stroganoff's treatment. It was noted in both these cases that the delivery of the child was rapidly initiated by the saline injection, and the treatment might be useful to hasten labour in cases of eclampsia. The observations indicated that hypertonic saline was contra-indicated in post-operative work in pregnancy where there was any indication of toxæmia, unless the pregnancy was to be simultaneously terminated. Salt restriction formed a necessary part of antenatal care, for a large intake of salt might precipitate a fulminating eclampsia. Prof. Harding conceived of the toxæmia of later pregnancy as a disturbance involving fundamentally a change in water distribution, which might show itself in many ways—e.g., by epigastric pain and vomiting, albuminuria with renal lesion, hypertension, œdema, convulsions, or peripheral liver

degeneration. His colleague, Dr. W. G. Crosbie, had referred to him an interesting case showing the relationship between œdema and blood pressure, in which the blood pressure and albuminuria were increased with œdema absent, and vice versa. The convulsions of eclampsia might be likened to the condition called "water intoxication" produced experimentally in animals by administration of water.

Dame LOUISE MCILROY congratulated Prof. Harding in his work, but said she felt the basis of her treatment of albuminuria had been destroyed; she wished to know of a substitute for sodium bicarbonate and potassium citrate in these cases. She would like to know the effect of this treatment on the liver, for she believed that this was the organ mainly affected in eclampsia. She considered that there were three problems in cases of albuminuria: (1) diagnosis of type; (2) when to terminate pregnancy; (3) when to allow further pregnancies. She needed the advice of a physician and a biochemist in the treatment of albuminuria. Induction of abortion was rarely necessary, because vomiting could actually be cured by treatment. She had found the treatment of repeated abortions by restriction of sodium chloride, together with thyroid and ovarian extract, very effective.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Oct. 2nd Mr. H. N. FLETCHER delivered a presidential address on

Ovarian Tumours,

giving details of 177 cases on which he had operated. Dermoid cysts, he said, appeared to be especially liable to complications, for of 12 in his series five were twisted, one was suppurating, and one was the seat of malignant degeneration. Two dermoids were found in loculi of multilocular pseudo-mucinous cysts. The more he saw of papillomatous cysts the more he regarded them as highly dangerous. They were usually described as locally malignant, because they seldom caused metastases outside the abdomen, and because if they ruptured and implantation occurred in the peritoneal cavity the daughter growths were usually surface growths and did not penetrate the organs on which they grew. None the less, such dissemination often destroyed life. Removal of the parent ovarian growths and of as much of the daughter growths as possible sometimes gave brilliant results, and Mr. Fletcher had had two such recoveries. On the other hand, four patients had had recurrence of ascites and masses in the abdomen, and had eventually died, one as late as three years after operation. Two other patients, both with bilateral tumours removed entire, and without dissemination, had recurrence and died. In all these cases the tumours were reported by the pathologist as papillomatous. The prognosis, if removal was accomplished before rupture was, however, usually good.

In malignant growths, which were often bilateral, and, if solid, not infrequently metastatic from some other organ, the prognosis was extremely bad. Of 17 cases, only two were known to be alive. Mr. Fletcher said he had remarked a loss per vaginam in several of these cases occurring after the menopause and referred to Robinson's view that this was due to a hormonal activity of the malignant cells. He deprecated the tapping of ovarian cysts before removal, owing to the impossibility of knowing whether they contained malignant or papillomatous elements. It was important to inspect both ovaries to open and examine any ovarian cysts removed, before the abdomen was closed, and to do a double ovario-salpingectomy and hysterectomy in all malignant and papillomatous cases whenever the conditions found and the state of the patient permitted. As an exception to this, in the case of a young woman, well below the menopause, with a single papillomatous ovary, it might be permissible to leave the other ovary if it looked perfectly healthy, and if the subsequent microscopic section of the removed ovary showed no sign of malignancy. But the patient should be kept under observation. Mr. Fletcher had had twice to remove the second ovary subsequently for similar disease. Finally, the patient and her husband should always have the possibility of radical measures explained to them before operation, and leave should, if possible, be obtained to do "whatever is best in the patient's interests."

REVIEWS AND NOTICES OF BOOKS

Diseases of the Skin.

By G. C. ANDREWS, A.B., M.D., Associate Professor of Dermatology, Columbia University, N.Y. London: W. B. Saunders Company. 1930. Pp. 1091. 55*s*.

THIS new text-book is noteworthy for the wealth and excellence of its photographic records of typical cases, and for that reason especially will rank as a valuable contribution towards the literature of the subject. Its purpose is entirely practical, the histo-pathological aspects of dermatology are almost ignored, and there are no micro-photographs. No less than 130 pages are devoted to the description and treatment of syphilis. Here the reader will derive profit from a study of the clinical illustrations, for examples are included of most of the typical cutaneous manifestations which, as a result of early diagnosis and the rapid effects of salvarsan therapy, can rarely nowadays be demonstrated on patients. Much space is devoted to treatment, and the student should note the line diagrams on p. 725, which purport to explain the occasional extravenous leak after an apparently successful entry of the vein This section would have been benefited by the inclusion of tabulated systems of routine treatment, with which in other subjects the volume abounds.

The chapter on eczema may confuse the uninitiated. The whole subject has been greatly complicated in recent years by the adoption of "allergy" as the explanation of all eczematous eruptions which can be clearly differentiated from those caused by special trades and occupations, or by organisms such as the pityrisporon (seborrhœa), the various mycotic (ringworm) fungi, and the cocci causing the common infections of the skin. The acceptance of the term involves a minute and painstaking search in each and every case of the disease for the presumed "antigen" to which the patient is sensitised, and this elaboration has led to the compilation of numerous diet tables and lists of cutaneous tests, the practical application of which would tax the resources and patience of the keenest investigator and the most

modern of dermatological clinics and nursing-home kitchens. The percentage of successes following the detailed use of this system is not encouraging in this country at least, and it is significant that the author himself seems to lay greater stress on the value of X ray therapy in actual practice. The technique of this is discussed in the greatest detail, not only for all stages of eczema, but for various diseases, such as psoriasis, in which other therapeutic measures are, in our view, equally palliative and greatly to be preferred in all but the most expert hands. There is no doubt, however, that the scope of X rays in dermatology is a wide one, and most authorities would agree with the author's view that it greatly exceeds that of the ultra-violet rays, which are of real value and have permanent effect only in the tuberculous affections.

Radium treatment and the Bucky or "Grenz" (border) rays are also discussed in greater detail than has hitherto been usual in text-books. The author's criticism that "there is an unfortunate tendency for an operator possessing a small quantity of radium to attempt the treatment of almost any lesion" is too true. His evaluation of the Bucky rays as inferior to X rays in general applicability and scope will be conceded by most authorities. An excellent chapter is included on surgical diathermy which in many hands threatens to supersede the knife and cautery, and with the new cutting devices offers particular advantages in combination with local anæsthesia in out-patient practice and the consulting room.

There can be no doubt that this book is a contribution of the first rank to the practical aspects of dermatology. It is in part highly technical, and for that reason will attract the trained dermatologist or intending specialist, while the many excellent illustrations will be of great help to the practitioner with dermatological leanings.

Lehrbuch der Urologischen Diagnostik.

By Dr. LEOPOLD CASPER, Professor at the University of Berlin; and Dr. EDWIN PICARD, Surgeon and Urologist. Leipzig: Georg Thieme. 1930. Pp. 473. M.48.

IN urology accessory means of diagnosis have been elaborated and brought to a very high standard of usefulness, and it was a capital idea on the part of the writers of the book under review to classify them, explain the technique of each, and bring all together into one volume. One section of the work describes in detail all the methods of examination of the urine, its microscopic investigation, with illustrations of the slides, and the chemical ways of identifying every sort of abnormal constituent. Investigation of the male genital secretions also comes under review, and a separate chapter is concerned with the modes of estimating the renal function by examination of the output of the kidneys. The cystoscopic pictures are beautiful and complete, ranging over all the diseases of the bladder and prostate, and including many plates showing the appearance of the bladder in certain extravesical disorders. Some special peculiarities which may be met with in the female bladder are discussed in a separate chapter. In the section on X ray diagnosis, after a careful analysis of the information to be obtained from the plain radiograms and pyelograms, the technique of many special procedures is described, such as oxygen pyelograms, which are particularly useful in confirming the presence of small stones in some situations, perirenal oxygen injection, lipiodol urethrograms, and various devices for examining vesical diverticulæ. At the same time the risks attaching to certain of these methods, notably gas distension of the renal pelvis and calices, are pointed out, and the contra-indications stressed. The reproductions of the X ray plates are remarkably good. Included in this part of the book is a chapter devoted to excretion pyelography.

This book on diagnosis will occupy a definite place in a urological library. The authors are to be congratulated on the care and thoroughness with which it has been compiled.

Mental Development of the Child.

A Summary of Modern Psychological Theory. By KARL BÜHLER, Professor in the University of Vienna. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1930. Pp. 170. 8*s.* 6*d.*

Prof. Bühler has here presented in a very readable volume (the translation is really good) what might be called the formal treatment of the development of the child mind, and this he has done most admirably. But when he turns to deal with the affective life, with emotion, and with instinct, and with the material of everyday life with which emotion and instinct are at work, he falls very short indeed from giving us a complete picture of the mental activities of the child. Not only has he been deficient in this direction, but he has competely failed to give attention to much of the work that has been done on this side of child psychology. Is Prof. Bühler so close to his celebrated fellow citizen, Sigmund Freud, that he has failed to see the bearing of psycho-analysis upon child psychology? One would have believed that the subject matter of the child's early years had some influence upon the development of its instinctual and affective life, and that these effected some modification or enhancement of subh activities of the mind as learning, curiosity, and even intelligence. Prof. Bühler either does not think so, or his reading has not extended to these important fields of child psychology. By these startling omissions the author has seriously diminished the value of an otherwise excellent summary. Medical men in particular will feel the inadequacy of this book.

Quick Reference Book for Medicine and Surgery.

Seventh edition. By GEORGE E. REHBERGER, A.B., M.D., Johns Hopkins University. London: J. B. Lippincott Company. 1930. 65*s.*

TEN years ago Dr. Rehberger, of Phoenix, Maryland, set himself the colossal task of preparing a clinical, diagnostic, and therapeutic digest based upon a study of recent medical literature, and his efforts have so well served the needs of a wide circle of readers that the book has run through six editions, and the seventh is now before us. The plan of the book is to deal successively with general medicine and surgery, and ten special fields of practical medicine excepting psychiatry. Each disease or disorder is treated alphabetically, which avoids the necessity of an index or even of numbering the pages, so that we cannot state the number of these, although some indication may be given by the fact that the volume measures 3⅝ inches between the two covers. Each section includes a scheme for the history and examination of the patient, and a list of equipment for dealing with that part of the practitioner's work; at the end is an alphabetical list of all the drugs mentioned

in the book, with their physical, chemical, and pharmacological properties. Dr. Rehberger claims nothing as his own except the plan on which the book is based and the judgment with which he has selected the material. He has himself been an isolated country doctor and writes with a knowledge of the needs of the general practitioner confronted with disease in all its manifestations. His modest hope is that the book will be as useful to his fellow-practitioners as the compilation of it has been to himself. In the successive editions the character of the book has in no wise changed, but it has been constantly revised and added to. The latest edition contains, for instance, under the letter A, new data on acromegaly, allergy, aplastic anæmia, pernicious anæmia, and artificial respiration. The book is a remarkable single-handed effort.

Les vomissements chez le nourrisson.

By E. LESNE and MAURICE COFFIN. Paris: Gauthier-Villars et Cie. 1930. Pp 139. Fr. 25.

THE object of this monograph is to provide a classification of the types of vomiting met with in infancy which shall be comprehensive and based on an accurate determination of the ætiological factors. It is especially concerned with this symptom in the first few months of life. At the same time, the relative value of evidence obtained by clinical observation, radiological examination, and removal of gastric contents is critically discussed. Vomiting is classified under three main heads: episodic, usually of dietetic origin; severe paroxysmal, including intussusception and pylorospasm; and associated with stasis due to an organic stenosis. A chapter is devoted to the diagnosis and treatment of the disorders included in each of these groups. The authors divide pyloric stenosis into two types, an acute one in which spasm plays little part and a less common chronic one in which both stenosis and spasm are present, the latter tending to mask the diagnosis. Comparatively little importance is attached by them to the absence of a palpable pyloric tumour. A series of useful diagrams illustrates the radiographic appearances of the infant's stomach in health and disease.

British Journal of Ophthalmology.

IN the September issue Lieut-Colonel H. Herbert writes on the Future of Iris-inclusion in Glaucoma. This is the operation which he devised many years ago and which in his own hands has given the best results. He claims that iris tissue lying in a sclero-corneal wound accomplishes something in the matter of drainage that nothing else can do. Trephining, he maintains, is apt to cause a drainage which is either too much, with marked hypotony or too little, because of closure of the trephine hole. Owing to the fact that a cut iris remains permanently unhealed by scar tissue, iris tissue in a sclero-corneal wound forms an ideal filter. The operation must, of course, be subconjunctival, and the protection from infection must depend on the efficiency of the conjunctival covering. Even so, elaborate precautions are necessary against the danger of septic infection and even of sympathetic ophthalmia. For prophylaxis, Colonel Herbert advocates thorough disinfection of the conjunctiva with either 1 per cent. nitrate of silver or 1 in 3000 sublimate of mercury for two minutes, about half an hour prior to operation. A unique case of sympathetic ophthalmia occurred in a case when this precaution was accidentally omitted. The details of Colonel Herbert's technique will be found in an appendix to his paper.—Dorothy R. Adams describes a case of Ring Sarcoma of the Iris, a rare form of tumour.—T. W. Letchworth gives notes of an unusual complication of Traumatic Cataract, which, after being watched for some weeks while maturity was developing, burst through the posterior capsule into the vitreous chamber, the condition being probably caused by a particle of steel which had entered through the sclera and was embedded in the posterior part of the lens.—J. Bruce Hamilton contributes two articles, the first on *B. welchii* Infection of the Globe. In one case a particle of steel could be seen in the vitreous with a large air bubble attached to it. A hypopyon with high temperature supervened during the second day, when evisceration was performed and quickly relieved the symptoms. This was a case of mixed infection with *B. welchii* and some pus-forming organism. In the second case there was no hypopyon but intense pain. Evisceration and the injection of anti-gas gangrene serum were followed by uneventful recovery. This case was apparently due to pure infection with *B. welchii* which gives the picture of an acute abdominal crisis, whereas in cases of mixed infection the appearance is that of an ordinary pan-ophthalmitis.—Mr. Bruce Hamilton's second article will receive comment later.

British Journal of Children's Diseases.

IN the July–September number Dr. N. Gray Hill contributes a paper on the Ætiology of Acute Rheumatism in which he discusses the incidence of the disease, its sex and age distribution, family and heredity, type of child affected, race, social status, diet, climate, and geographical distribution, seasonal incidence, home conditions, Clarke's theory of transmission of the disease by the rat-flea, and the relation of juvenile rheumatism to scarlet fever and other infectious diseases.—In a paper on the Therapeutic Value of Streptococcus Antitoxic Serum in Scarlet Fever, Drs. T. Toyoda, J. Moriwaki, Y. Futagi, and S. Hoshizaki record their observations at the Government Isolation Hospital, Dairen, Manchuria on the use of antitoxin in the treatment of scarlet fever. Their conclusions are as follows: (1) scarlet fever streptococcus antitoxin reduces the mortality of the disease by half; (2) it has a remarkable effect on the symptoms due to the streptococcus toxin—viz., rash, fever, itching, vomiting, convulsions, and cardiac palpitation; (3) while the serum has some effect in reducing the incidence of complications it does not appear to have any effect on complications which have already developed.—In a paper entitled Metastatic Calcification: Notes on Twins Born Shortly after an Attack of Small-pox in the Mother, Dr. J. Pickford Marsden reports the case of a woman who gave birth to twins within a month of an attack of discrete modified small-pox. One twin apart from its puny condition was normal, while the other showed a discrete septic eruption, generalised purpuric spots, and calcareous nodules. The child died after showing signs of tetany. Post mortem calcareous nodules were found in the kidneys and lungs.—Dr. R. Hutchison and Dr. Alan Moncrieff report a Case of Primary Hypertension in a Child. The patient was a girl, aged 8½ years, in whom the systolic blood pressure ranged from 180 to 220 mm. Hg. The heart was enlarged with an accentuated aortic second sound and a gallop rhythm. Examination of the blood just before death showed high normal figures for blood-urea, and examination of the brain, blood-vessels, and kidneys post mortem failed to show any abnormalities, so that the case was one of primary or essential hypertension.—Dr. E. W. Goodall describes a Case of Cancrum Oris with Recovery and Subsequent Repair of the Defect by Plastic Operation. Photographs show the state of the patient before the operation at the ages of 7 and 15 and the excellent result obtained by a plastic operation performed by Sir James Berry.—Dr. J. H. Twiston Davies contributes a Note on Two Cases of Connective Tissue Nævus, the patients being a boy aged 8 years, and a girl aged 18. The abstracts from current literature are devoted to genito-urinary diseases.

THE LANCET.

LONDON: SATURDAY, OCTOBER 11, 1930

PROGRESS OF CLINICAL SCIENCE.

WE print elsewhere the stirring address delivered by Lord MOYNIHAN at the opening of the Banting Research Institute at Toronto. He gloried in what had been achieved and must have fired his audience to a faith that one of the few things worth doing in life is to see that progress is quickly made in passage through some of the innumerable labyrinths wherein medicine has to pick its way of practical daily action. In particular, he urged upon his hearers the importance of the Hippocratic method of approach and a large portion of his address is taken up in deploring the sinful indifference of physiologists to clinical medicine. Since the rise of the laboratory and the permeation of all branches of biology by the experimental method, many writers and speakers have complained that the bedside, the case-history, and the fingers have too often been deserted for the test-tube, the microtome, and the guinea-pig. Of the reasonableness of these complaints there can be no doubt. Medicine, as Lord MOYNIHAN points out, would be a science of itself even if it was never applied, and it is axiomatic that every science must solve its own problems. In other words, clinical problems must be solved by clinical study and can be solved only in that way. The reason for this is plain enough. The difficulty in making progress in natural knowledge lies not in finding answers to questions but in framing the questions. Once a simple soluble question has been propounded, its solution generally needs nothing more than diligence and attention. And appropriate questions can be framed only by those soaked in the study of the subject; outsiders are often of help in the technical solution of problems but they cannot possibly tell medical men what the problems of medicine are. Only medical practitioners can do that. We believe, therefore, with Lord MOYNIHAN that the Hippocratic method of observation and inference must be the starting-point of all good medical research. It has, of course, its limitations, and the Galenic method of experiment is ever its natural supplement, complement, and corrective. Mr. WILFRED TROTTER some time since discussed very suggestively [1] the due and proper functions of observation and experiment in the pursuit of the medical sciences. Recognising that the questions are set by clinical observation, that in the past a good many answers have been obtained by the same means and that the method still has a fundamental part to play, he suggests that with the progress of knowledge the questions have become more complicated and difficult and that in very many instances we must, for fruitful results, resort to experimentation and, above all, experimentation on man. Animal experimentation has its necessary place; there is a huge field of which knowledge is essential where experiments on man are ruled out. But man is notably a peculiar animal; he walks upright; those who study fever may well ponder OWEN'S remark that "man is naked and is the only terrestrial mammal in that predicament"; he lives far beyond his natural span; and he has an impressive personality. The results obtained on mice cannot be transferred as such to man, and within its legitimate sphere human, or as Mr. TROTTER calls it, "direct," experimentation has been extremely fruitful. Lord MOYNIHAN urges the same point of view and welcomes Mr. TROTTER'S happy orientation of the position in calling animal experiment "collateral."

Why is it then that so much recent "medical research" has been centred in the laboratory rather than the wards? The plain answer seems to be twofold. In the first place a great many of those who spend their lives in contact with sick people do not happen to have curious minds and are not concerned to add to knowledge. Of surgeons Lord MOYNIHAN says, "men can live prosperous" (and we would add very useful) "lives without contributing a single fresh thought, the slightest modification of any known procedure, or the establishment of any new method to science or art." A curious mind is a gift from God. A man who has not got it has not got it and it is of no use complaining; a man who has it cannot keep it under—it was once said of one of our great leaders, "if BAYLISS was a bus conductor, he would make a good research out of it." One of the few really sad sights of modern medical research is the uncurious man trying to be curious and to engage in research as a matter of duty. And in the second place it should be frankly recognised that real clinical research, centring on sick people, is vastly more complicated, more difficult, more disappointing than inquiries which revolve round the experimental animal. The essence of experimentation is to reduce the variables to a minimum and to observe what has been deliberately produced rather than what is presented to us without our control. The processes of disease are never simple: the causes, changes, adaptations, compensations which operate make up pictures of amazing complexity. Small wonder is it, therefore, that so many investigators have got away from the wards into the comparative calm of the laboratory where results of some sort can be guaranteed. It needs a very restricted curiosity or a very stout heart to stick to the troubled frustations of the bedside. Yet there is no doubt that it can be done. Lord MOYNIHAN himself gave a striking demonstration of the possibilities when, years ago, he to all intents and purposes "discovered" duodenal ulcers and convinced doubters of the existence of a lesion almost unknown to the morbid anatomists. In recent years, too, Sir THOMAS LEWIS and his colleagues at University College

[1] Brit. Med. Jour., July 26th, p. 129.

Hospital have shown what can be done in real clinical research and for them, under the auspices of the Medical Research Council, there has been constituted the first recognised Department of Clinical Research at a large teaching school. One attaches, therefore, considerable importance to Sir THOMAS'S opinions on the subject.[2] He judges that though the quantity of clinical inquiry which finds its way into print is immeasurably large, its quality is deplorably low; clinicians have a "less rigid standard of truthfulness than physiologists," and there are many statements, purporting to be of fact, in the text-books which need verification. His remedy is to encourage, on the one hand, a habit of mind, and on the other the necessary facilities and armamentarium by which what he calls "clinical science" should be pursued in the same disinterested spirit in which English physiology has prevailed so well. As things have been, it has been difficult for any young man whose heart is set on such a course to pursue it. Ordinary hospital experience disperses his interests to a destructive degree, he gets no training in making concentrated attacks on individual problems, and his daily contacts with a world largely coloured with professional considerations do not make for the right atmosphere in which an essentially curious mind may come to fruition. Given opportunities, Sir THOMAS believes that the right men are available. Strangely rare as they have been in the past, we think he is right.

Let us pass finally to Lord MOYNIHAN'S complaints about the physiologists—that they have neglected hominal research, that they are aloof from medicine, that their science is playing truant. We believe that his contentions are mistaken or at least greatly exaggerated. In general, each science must solve its own questions and the questions come from natural curiosity. For surgery to tell physiology what it ought to be interested in is as futile as for a physiologist to attempt to guide the surgeon: freedom is as necessary in one case as the other. First-rate brains are seldom prepared to be interested in other people's problems, and physiology has long since established its own field and cultivated it with wonderful success. In particular, Lord MOYNIHAN exaggerates the neglect of man as a subject of physiological experiment. Dr. J. S. HALDANE and his disciples have consistently practised the study of man as a whole, and Prof. A. V. HILL has combined the most refined analysis of isolated tissues with an illuminating study of man's capacity to do muscular work—surely a topic of unusual medical importance. Lord MOYNIHAN says that physiologists pay too much attention to muscles—and that with muscular rheumatism still defiant! However, we hardly suppose that he expects, or would like, to have physiology reduced to an appendage to medicine. What he asks for, and this is certainly needed, is that more people well-trained in the methods and results of classical physiology should interest themselves in clinical studies, bending their minds particularly to the near-normal physiology which he calls paraphysiology. These persons will be primarily not physiologists but clinicians of a physiological upbringing. They are exactly those contemplated by Sir THOMAS LEWIS and the more there are of them the quicker will clinical science progress.

[2] Ibid., 1930, i., 479.

RISK OF IRRADIATION OF GERM-CELLS AND FŒTUS.

IN Central Europe the method of temporary sterilisation of young women by means of X rays has been accepted almost generally for more than a decade. Among conditions treated in this way are uterine fibromyomata, menorrhagia, dysmenorrhœa and various types of adnexitis; sterilisation may last from six months to two years according to the dose. Doubt has arisen, however, as to whether this method of sterilisation may not be fraught with the risk of impairing the development of germinal cells which it does not destroy. Malformations have been reported in the offspring of animals, both amphibian and mammalian, whose ovaries have been X rayed prior to conception, and the danger of pelvic irradiation during pregnancy has been repeatedly demonstrated. The possible effects of X rays on the young in utero are well demonstrated by the recent experiments of D. P. MURPHY and M. DE RENYI on albino rats.[1] Among 34 animals subjected to varying degrees of irradiation during pregnancy five cast litters in which gross defects were found in the young. Absence of toes or clubbing of feet occurred in one or more of the members of each of these litters, and the frequency with which defective young were produced appeared to vary directly with the degree of exposure. The deformities were not duplicated in a control series of 125,000 non-irradiated animals. But long before this some parallel cases in the human subject were recorded. ARCHENHEIM, for instance, described a four-year-old child with eye malformation, microcephalus, and intellectual disturbance who had been born after irradiation as a fœtus in utero. A similar case was described by E. STETTNER,[2] and among 76 other reported cases of children born at full-term following irradiation of the maternal pelvis during pregnancy, 18 were microcephalic and other developmental defects were exhibited by some of the remainder. Dr. J. S. QUIN called attention to the danger at a recent meeting of the Royal Academy of Medicine in Ireland; and a discussion[3] at Detroit last June in the annual session of the American Medical Association led to the advice: Always curette before proceeding with pelvic irradiation. So real is the danger, said the opening speaker, as to justify the interruption of pregnancy when an unsuspected pregnancy has been exposed to prolonged irradiation. It was agreed, however, that was no evidence to prove that a mere diagnostic irradiation during pregnancy did any harm.

But while irradiation of the fœtus in utero may

[1] Surg., Gyn., and Obst., 1930, l., 861.
[2] Jahrb. f. Kinderh., 1921, xcv., 43.
[3] Jour. Amer. Med. Assoc., 1930, xcv., 860.

be expected to give rise to abnormalities, owing to the selective action of the rays on embryonic tissues, the ill-effects of irradiation of the generative organs of either parent before conception are less well proven. They are certainly not constant. I. I. KAPLAN has recently set out [4] the case of a woman with severe pulmonary tuberculosis in whom termination of pregnancy was attempted by X ray exposures over a period of 14 days, and was finally accomplished by surgical interference. A subsequent pregnancy was normal in every way and ended with the delivery at term of a healthy child weighing 7½ lb., whose development has since been perfectly satisfactory. MURPHY has performed experiments in rats to decide whether the offspring irradiated before conception might transmit any abnormalities to the second generation, even though the first generation appeared to be healthy. He found that the numbers of young in the litters of irradiated rats were less than in the litters of control animals, and that the mortality was higher during the first month among the young of irradiated animals, but that abnormalities were no commoner and that the rate of growth did not differ materially from that of the controls. The second generation showed no evidence of ill-health or under-development which could be attributed to the grandmother's irradiation. A. LACASSAGNE and H. COUTAUD, however, observed [5] general dwarfing in the offspring of rabbits, whose ovaries had been irradiated previous to conception; the young were weakly and showed a high mortality during the first few months. L. F. DRIESSEN has observed [6] similar results in guinea-pigs, and in some cases the offspring have been sterile. K. SEYNSCHE reports [7] three cases of physical and mental defects in children which he attributes to irradiation of the generative glands of one or other of the parents, but W. SCHMITT joins issue [8] with him and is not convinced of the part played by irradiation in determining the abnormalities of these offspring. Opinion at the Detroit discussion was quite definite that ovarian irradiation prior to conception is harmless.

[4] Surg., Gyn., and Obst., 1930, l., 492.
[5] Gyn. et obst. rev. mens., 1923, vii., 1.
[6] Strahlentherapie, 1923, xvi., 656.
[7] Ibid., 1925, xxi., 600.
[8] Ibid., p. 608.

ATHLETICS AND THE MEDICAL CURRICULUM.

THE rôle of exercise in modern education is a source of solicitude, intermittent or perpetual, to most educational authorities. So far as schools are concerned, provision for ensuring the free development of the play instinct, having its manifold influence upon body and mind, is accepted as a matter of course, and no parent would contemplate the selection of a school which did not include among its amenities adequate opportunities for exercise. The relative proportions which mental and physical education should possess, and the possible evils of excessive application or exertion in either direction, form, however, a controversial issue, especially where the adolescent is in question, who is feeling the embarrassing claims of advancing maturity. At the universities participation in games, as in other forms of recreation, is left to the taste and discretion of the individual, who thus loses at a critical time the advantages of supervision. From time to time the thesis is submitted that undue prominence is given to athletics, both at schools, with the ægis of authority, and at universities under the spell of personal proclivities or collegiate rivalries; as a consequence a wrong sense of values may be created with, especially at the universities, a waste of time which should have been devoted to the more serious features of a future career. And such arguments as are advanced where university life is concerned, apply with special force in regard to the student in the medical school. For whilst here a certain liberality is conceded in respect to the variety of ways, of which exercise is one, in which young men may spend their leisure, medical students, more than those who are being trained, whether at universities or institutions, in other directions, are held to have arrived at a stage, even while in a state of pupillage, when they are face to face with the serious affairs of life. This is a consideration which led Dr. IZOD BENNETT, as dean of the Middlesex Hospital Medical School, at the opening of the October session, to view the public school training with its traditional athletic associations as an unfavourable preliminary to the pursuit of medicine. He said:—

"The masters at English public schools appear to cling to the belief that a rudimentary knowledge of classical languages is sufficient to secure true culture and future success. They are mistaken; while at the present time it is quite exceptional for a medical student to have received sufficient education in the classics to enable him either to decipher the medical works of the sixteenth century, or to write his mother tongue with real fluency. . . . Under the present regulations of the University of London the first examination in chemistry, physics, and biology may be taken from school, but although many students so escape the extra year of training in a medical school, our experience is that the standard of knowledge which they have acquired is quite inferior to that reached by students who begin their study of the preliminary sciences in our own institution. During a recent visit to the medical schools of Holland, I found that before being accepted as an undergraduate of a Dutch university, the student must pass an examination of proficiency not only in his own language but also in no less than three living foreign languages. I do not suggest that a similar standard should be demanded in this country, but I feel very strongly that if we seek to retain equality with other nations, it would be reasonable to ask that every medical student should receive at school sufficient instruction to enable him at least to read two foreign languages. Schools and universities of the United Kingdom have, in the past, gained for the country a reputation of pre-eminence in the world of sport, and I fear that the omission of reference in this report to such activities may prove disappointing to many people present. The Middlesex Hospital Medical School is an institution for work; more than that, it is an institution devoted to work of great severity and of a high intellectual quality. The policy of its council is to recognise this fact and to encourage it."

Dr. IZOD BENNETT'S words are very much to the point as far as the academic side of school

training is in question, though we doubt whether the medical schools, more than the centres of training for other careers, have a right to complain of the literary and scientific equipment of our school-boys. But as far as his words may be taken as attributing the faulty training of the schools to the demands of athletics—which he does not say—we think that the overhanging threats of examinations must act as a counter-weight. At medical schools the pursuit of organised sport can fairly be recognised as promoting between students a wholesome union, creating an atmosphere in which work can proceed in a spirit of good fellowship. The procedure at the formal openings of the medical schools almost invariably includes a summary of the school's achievements during the preceding year, and the applause with which a recital of athletic successes is announced and received is a proof that we have here a sentiment to deal with that cannot be disregarded. Further, although undue stress must not be laid upon individual instances, many examples can be found of medical students who have gained repute simultaneously in athletics and in the schools. The glamour of athletic success may attract students to a particular medical school or college of a university, and this can only be criticised if the authorities encourage the adherence of the athlete above all other considerations—a possibility which cannot be ignored in view of the restrictions in the London medical schools upon the admission of female students.

Admittedly the duration and severity of the medical curriculum make great demands upon the adolescent's energy. But time must be found for recreation, while it is often necessary to warn the conscientious young man that undue devotion to the mental side with neglect of the physical is a real danger. A valuable asset to the doctor is a strong constitution, without which success becomes problematic, notwithstanding high intellectual gifts and other advantages. In every profession the possession of good health is, of course, a prime factor in success, but nowhere is this fact more obvious than when we are thinking of our own calling. For the strain to which the doctor is submitted in the ordinary course of his life is perpetual, and also many sided; social circumstances as well as scientific problems require his perpetual attention; an organisation of the work into a routine can never be brought about. Ability to rely upon himself must not falter, and everything that adds to his own physical well-being will find its happy reflection in his patients.

ANNOTATIONS

THE AIRSHIP DISASTER.

THE airship R101 crashed almost at the commencement of its journey to India with the loss of 47 lives, including the Secretary of State for Air, the Director of Civil Aviation, and many of the men to whom we owe the development of airships in this country. Whatever may have given rise to the vessel's descent, it was the explosion of combustible gas in the envelope by which the navigators and passengers met their end. Nine years ago, when the R38 took fire on its trial flight over the Humber, the question in everyone's mind was whether the danger latent in hydrogen could not be obviated by the use of helium and some alternative to the petrol engine found. R101 was unique in that it was driven by Diesel engines, burning an oil which will extinguish a lighted match, but the gas was the same hydrogen as before. The safety of helium as a buoyant agent is widely known; it is not only non-inflammable but has hitherto resisted every effort to make it combine with other elements. Although widely distributed in nature helium is only obtainable on a commercial scale from the natural gas of Kansas, of which it forms 1·5 per cent., and its use has so far been confined to airships of the United States. The suggestion has been made that the high cost of this gas was a contributory cause of the disaster to the *Shenandoah*, because the number of automatic safety valves in the envelope were so far reduced, in the effort to prevent the waste of a gas so difficult to replace, as to impair its mobility. Nevertheless, when the accident did occur some of the crew owed their lives to the fact that there was no fire. It may well be that airship pioneers and inventors are ready to risk their lives beneath a gasometer of explosive gas, but the recent calamity turns the mind once more towards the possibility of using a safer buoyant agent. Everyone will be glad to learn that legislation is to be introduced into the United States House of Representatives to permit the exportation of helium for the use of aircraft of foreign Governments.

THE LOCKYER COLLECTION.

THE formal gift to Charing Cross Hospital of his collection of more than a thousand obstetric and gynæcological specimens was made by Dr. Cuthbert Lockyer on Oct. 4th in the museum of the medical school. The collection, which is said to be the finest of its kind in London, is the product of 30 years' work, and is supplemented by nearly two thousand microscopic sections of the actual specimens displayed, or of parallel conditions. Dr. Lockyer has provided a sum of £500, the interest of which is to be used for the maintenance of the collection in its present perfect condition, and he has himself prepared and published[1] a catalogue of the specimens for the use of those working in the museum. He has also presented a microscope of historic interest, once the property of Mr. J. H. Targett, who in the preface to the catalogue, is described as the first gynæcological pathologist of his day. Dr. William Hunter, who was present at the opening ceremony, spoke of this collection as the most important since John Hunter laid the foundation of the museum of the Royal College of Surgeons. The specimens, perfectly mounted, cover a wide field, and in addition to a remarkably complete range of common conditions, include most of the rare tumours of the female generative organs and an interesting series of specimens illustrating ectopic pregnancy. The catalogue has been so arranged as to act as its

[1] London: John Bale, Sons and Danielsson, pp. 297.

own index, and it embodies comments on the material which are likely to prove of value to the student. Speaking of the origin of the collection, Dr. Lockyer said that it was on the suggestion of Dr. William Hunter, in 1912, that he first sent his specimens to the hospital medical school; since then he had added to the collection, and had included several specimens of value contributed by his colleagues. Although a few rare pathological states are not illustrated, the morbid anatomy and histology of gynæcological diseases are amply represented; the collection is likely to prove of value, not only to students of the hospital, but to all those interested in the study of diseases of women.

ACHYLIA GASTRICA AND PERNICIOUS ANÆMIA.

To the *American Journal of the Medical Sciences* for September, 1930, Dr. W. B. Castle, Dr. W. C. Townsend, and Dr. C. W. Heath contribute a third paper describing their observations on the ætiological relationship of achylia gastrica to pernicious anæmia. Their previous papers showed that the interaction of normal gastric juice with beef muscle produces a substance that can take the place of liver in the treatment of pernicious anæmia. The present communication is concerned with the analysis of the two factors involved, the "intrinsic" in the gastric juice, the "extrinsic" in the beef. The tests were made on typical cases, a positive therapeutic result being assumed from a significant reticulocyte rise within ten days.

In the study of the intrinsic factor, beef digested with HCl and pepsin (U.S.P.) was first tested but caused no improvement in the patient. On the assumption that the intrinsic factor might well be another enzyme, normal gastric juice, heated to 70°–80° C. to destroy all enzymes, was added to the beef and pepsin. The result was again negative, and this was controlled later by the fact that excellent remissions were obtained in the same patients when the juice in the mixture was left unheated. It thus seems fairly certain that the effective substance is produced in the normal gastric digestion of protein, though not by the action of pepsin. The possible actions of saliva and of regurgitated duodenal contents were also investigated. Beef was chewed by a normal person, ejected, incubated, and finally digested in the presence of acid pepsin (U.S.P.). The result was negative until the pepsin was replaced by normal gastric juice. The examination of the duodenal contents was more difficult, but also more interesting. The procedure was as with gastric juice, but at a reaction of pH7. The result was unexpectedly positive, but it was found that beef, first digested with acid pepsin, and later incubated with normal gastric juice at pH7, also gave a positive result in the patient. For many reasons it was thought unlikely that the duodenal secretions contained the intrinsic factor, and it was easy to show that gastric ferments occurred in duodenal specimens obtained by the usual methods. But if the intrinsic factor can act at pH7, it would be important if comparatively pure specimens from the duodenum were found to be inert. This was achieved by means of a multiple-tube device, allowing samples of gastric and duodenal contents to be obtained at the same time while the pylorus is blocked. When this special duodenal juice was incubated with beef previously digested with acid pepsin the mixture produced no clinical improvement in the patient, though a reticulocyte rise to 4 per cent. occurred on the eighth day. Later substitution of gastric for duodenal juice produced a complete rise in reticulocytes to 28 per cent. in the same patient.

This result would appear to indicate that the intrinsic factor is secreted in the stomach, and the authors briefly discuss the possibility of rennin being involved. In earlier work no success had been obtained by treating patients with pig's gastric mucosa, previously autolysed with HCl in the incubator, but lately other authors have succeeded by using dried pig stomach. The previous failure is now attributed to the acid autolysis, which, incidentally, would have destroyed the rennin present. Further tests have now been made, using pig mucosa as fresh as possible, minced up and incubated with beef and acid pepsin. Although this procedure gave excellent remissions in patients the authors do not seem to be convinced that the mucosa alone would not have done equally well. They find that the essential substance in pig muscle is much more thermo-labile than that in liver.

Less work has, so far, been devoted to the study of the extrinsic factor. Muscle protein was precipitated at the isoelectric point, washed and incubated with normal gastric juice with successful results, whereas wheat gluten flour similarly treated was inert. An attempt to purify the protein further met with failure, possibly through denaturisation. This very interesting communication ends with an exhaustive discussion of the work done and its significance.

A SILENT HOUSE.

A SOUND-PROOF music room is an old conception, but the possibility of a sound-proof house was newly demonstrated at Olympia during the recent Building Exhibition. The materials used for the construction of each of the rooms varied; the study was so closely panelled in African mahogany as to be almost impermeable to sound; cork parquetry on the floor and a muted typewriter helped to preserve an atmosphere of almost ecclesiastical repose. The furniture, of mahogany and also made to the design of Mr. Tristan Edwards, was utilitarian without being ugly. The dining-room walls were made of Canadian spruce set in three parallel partitions, an arrangement said to be not only sound-proof but heat-proof, cold-proof, and water-proof as well; a number of identical tables of African walnut could be scattered round the room or assembled to form a dining table of any dimensions required. The walls of the drawing-room were constructed of compressed wood fibre, an English product which is unusually resistant to water. A Sorbo rubber material underfoot gave a sensation of walking on cotton-wool. Silent gas fires were in every room, and the windows, glazed with ultra-violet glass, were set in steel frames. In the nursery a special arrangement of baffle boards in the upper ventilating flap of the windows allowed air to enter but excluded noise; equally, of course, the outer world and the rest of the house were insulated from the noise of the nursery. A rubber material on the floor was decorated with nursery pictures designed by Marie Petrie; the furniture was low and adjustable. There were no special points of interest in the silent bathroom except a mirror with a luminous frame which lighted the inspected face. The kitchen was built of insulating bricks, hollow in the centre; it was furnished with electric cookers and with a large double dresser across the lower shelf of which articles could be passed directly from the stove to the sink. The bedroom, furnished with extreme simplicity, contained

a box-spring mattress in the middle of the room, mounted on an arrangement of drawers which made it possible to dispense with a chest. Even the front door was approached silently across a rubber pavement, where a pattern of arrows directed at the entrance pointed the returning wanderer to his home. Although such complete isolation would be ideal for a study it might have its dangers if universal; it is possible to imagine the tenant in his sound-proof drawing-room oblivious to an alarm of fire. A more common occurrence would be neglect of the telephone, unless bells were to be fixed in every room.

PSYCHOPATHOLOGY AND PUBLIC SAFETY.

IN a letter which appeared in our correspondence columns last week, Dr. Frederick Dillon suggests the insufficiency, from the social aspect, of procedure in which legal requirements may seem to be adequately met. A youth of 17 who had described to the police, with dramatic detail, a murder he had committed was in due course brought before the bench of magistrates. When his story was shown to be false he was released with an admonition for telling deliberate untruths, the facile explanation that the motive for the escapade was a desire for notoriety being readily accepted. Dr. Dillon, however, pointing his argument by reference to a case in which a similar self-accusation had preceded an actual murder, shows the danger of what he calls "this surprisingly casual method of dealing with the case." But whilst agreeing with him as to the serious issue involved, we find little cause for surprise, since such lack of psychological examination is a commonplace. There is no regular machinery by which the pathological significance of disorders of conduct can be brought to light in court procedure, and in this case, even if the magistrates had been sufficiently informed to suspect its nature, it is not easy to say what steps they could have taken to obtain a skilled examination of the youth. Then if such an examination confirmed Dr. Dillon's hypothesis of mental abnormality, further difficulties of disposal and treatment would certainly arise. It may, indeed, be claimed that the law, having found the prisoner not guilty, had done all that could be expected of it, the only fault of the magistrates then being the violation of that old legal maxim about giving a judgment but not the reasons for it. The other example cited by Dr. Dillon recalls a case that occurred in Wales a few years ago when a youth, found not guilty of the charge of murdering a young girl, committed a second murder after his release. It was mentioned in evidence, apparently without comment, that the prisoner had a curious "hobby" which to the informed observer was plainly a pathological fetishism the recognition of which might have saved the second tragedy, although the application of such knowledge in the course of the trial might have involved peculiar legal difficulties.

We have progressed beyond the conception that the sole functions of a criminal court are to answer the question "Guilty or not guilty?" and allot penalties. By some people the intervention of the psychologist is still regarded only as an attempt to mitigate punishment, and when the intervention is on behalf of one party this view has at least apparent justification; when the advice of the expert is officially at the disposal of the court we recognise an attempt at understanding and correction that may have a value to society in achieving what punishment alone often fails to achieve. But there are further needs, and the ideal, at present impossible, is that every court should have at its disposal all available evidence or information by which modern psychological knowledge can assist it in understanding a case, not merely in the interest of the prisoner but for the protection of the public. The incident to which our correspondent has referred shows how magistrates, in the absence of technical knowledge or assistance, may fail to appreciate the significance of disorders of conduct with which they have to deal, and there seems no easy way of guarding against this failure. The difficulty can only be met by a wider diffusion of knowledge that will enable magistrates and others to recognise those cases in which mental abnormalities are likely to be glossed over by easy but insufficient explanations, and by providing facilities for expert examination when it is found necessary.

AN ESSAY IN SLUM CLEARANCE.

PORTSMOUTH is coming to grips with its slum problem. Dr. A. Mearns Fraser in his report for 1929 tells us that a survey has been made of houses unfit for occupation and closing orders issued in a number of cases. The town council has now to decide the terms upon which the tenants are to be moved to new municipal houses, an essential part of the Portsmouth scheme being that occupants of demolished houses shall be offered accommodation in the new council houses now being erected. The conditions of 58 tenants are given by Dr. Fraser as typical of many others who will be similarly displaced. Most of them are not in regular employment and they now pay no more than an average of 5*s*. 5*d*. per week in rent. They cannot, it seems, afford to pay more than 6*s*. 4*d*., whereas the lowest rental of a municipal house is 10*s*. 3*d*. If the scheme is to be carried out, a further subsidy in the form of rent reduction is not to be avoided, and the only question is, how to arrange a scale of relief? Banbury is cited as the only town that has such a scheme. There an abatement of 1*s*. per week is allowed for every child of school age down to a rental of 6*s*. 6*d*. This minimum rental is raised 1½*d*. per week for every shilling over 30 of the weekly income. Thus, a tenant would pay the minimum rental if he had four children of school age and an income of 30*s*. Out of 37 Banbury houses in the scheme 22 are let at 6*s*. 6*d*. The National Housing and Town Planning Committee has suggested a scheme to apply to families with a weekly income of less than 55*s*. and three or more children. If the income is between 45*s*. and 55*s*., the rent abatement is 3*s*. for the first three children and 6*d*. a week for each further child, with a maximum of 4*s*. If the weekly income is less than 45*s*., the abatement is 4*s*. for the first three children and 6*d*. a week for each further child, with a maximum of 5*s*. The Committee further suggests that the abatement shall apply to children under 14 years, older children still at school, and approved dependents; and that two-thirds of the cost of these rent allowances should be borne by the exchequer and one-third by the rates. Dr. Fraser thinks that at this stage the Minister of Health should be asked if there is any hope of State assistance for such a scheme as this. He points out that much more will be required than simply turning these tenants haphazard into new council houses and sending someone to collect the rent. After the sudden change from a slum to a modern dwelling, many of them will need education and encouragement in looking after their houses; others a firm hand to prevent them reducing their new environment to the condition of

the places they have left. With this object, Dr. Fraser favours the appointment of a well-paid manager trained in Octavia Hill's methods before any of the houses are let, so that she can make herself acquainted with prospective tenants and decide on the type of house best suited to each. The result will be followed with attention by housing reformers elsewhere.

THE OBSTINACY OF PARENTS.

THE reluctance of parents to the provision of treatment for their children is a difficulty that extends to all kinds of medical practice, and is a trial to the dentist, the oculist, the surgeon, and the school medical officer, as well as to the private general practitioner. It is perhaps the dentist working for an education authority who feels it most. In many areas where facilities are adequate less than half the parents are willing to make use of them. There may be various reasons for this—e.g., the fact that a small charge is made, the trouble of taking the child to the clinic, the desire to spare him what is deemed unnecessary pain, and perhaps the influence of the child's fears and protests. But the chief obstacle seems to lie in a curiously misapplied independence of spirit that rebels against interference, and still more in a deep ignorance of the need for any measures except in the emergency of acute toothache. The oculist has to face somewhat similar difficulties, the child's fear of a painful extraction being replaced by unwillingness to bear the ridicule of his fellows when he first appears in goggles. The parent is more directly concerned about paying for the glasses—a situation greatly eased by a plan of deferred payments. Many parents incur heavy responsibility from their failure to carry out the treatment of squint by periodically shading the better eye. The fault here is want of faith and persistence rather than obstinate refusal. On the other hand it was sheer recalcitrancy that caused a mother in Rutland, as recently noted in one of our summaries,[1] to refuse to allow her child to wear the glasses which she had been forced to obtain. Operations for tonsils and adenoids may be resisted on some of the grounds already cited, but more often because the risks of surgical treatment are exaggerated and its value insufficiently appreciated. The family doctor may feel it his duty to urge operation while he knows well that he will be blamed if minor ill-consequences result. He has not behind him the resources for persuasion possessed by the medical officer of an education authority—few of the school medical staff fail to testify their debt to the efforts of the teachers—but the family doctor has the advantage that parents regard him as a friend and not as an official. All doctors alike are hindered by the propaganda and specious promises of unqualified practitioners, and the greatest weapon in the cause of health and improvement lies in the enlightenment of public opinion. In public health and school work approved methods to this end are the travelling lecturer with cinematograph, the issue of leaflets, the writing of essays by the children with the inducement of prizes, and the award of honours, flags, or medals to schools with the best records. When all is said and done it remains the personal exhortation by the doctor, however much expenditure of time it requires, from which the best value is to be expected. A troublesome proclivity of a certain type of parent is to seize upon some unguarded comment made by one medical man, and repeat it with exaggeration to another. It behoves both sides to avoid playing into the hands of mischief makers, the one by exercising great discretion in his remarks, the other by remembering how the phrases that reach him are likely to have been distorted.

[1] THE LANCET, August 23rd, p. 425.

SCLEROSING SOLUTIONS IN THE NOSE.

INJECTION of sclerosing solutions has been widely adopted in the treatment of varicose veins and piles, and the method has recently been advocated by Dr. L. H. Leroux,[1] of Paris, for cases of vascular hypertrophy of the inferior turbinals. The conditions here seem to be by no means the same, for in the treatment of the turbinals the needle is inserted until it is in contact with the bone, and the injection is made into connective tissue and not into the vessel. Leroux employs a 5 per cent. solution of the double hydrochloride of quinine and urea, giving two to four injections of 2–3 c.cm., according to the size and tumefaction of the turbinal. He claims to obtain a great diminution in size after 8 to 10 days, without breach of surface, inflammatory reaction, or ulceration, and without risk of the sepsis or adhesions which may result from the galvanocautery. Some nasal obstruction follows from reactionary swelling, and he advises that a week's interval should elapse between treatment of the two nares.

SURGICAL FEES.

IN his presidential address to the sixtieth annual meeting of the Colorado State Medical Society, held at Pueblo, last month, Dr. W. A. Kickland, of Fort Collins, presented a forceful and independent point of view on the disparity between medical and surgical fees. The high cost of surgery, he remarked, is not new. A surgeon in the thirteenth century was able to charge the equivalent of $200 for an operation and to claim in addition an annuity of $25 a year. But in modern times the difference in the fee paid for the difficult and skilled work of diagnosis and for surgery, which may involve no more skill nor the use of more costly apparatus, has led to abuses. Fee-splitting, he thought, was originally an attempt to correct the injustice and for a while it worked well. The patient was not submitted to operation without consultation; surgery was confined to the trained specialist and medical relations were happy. However, abuses crept in. The operator might be selected less by his skill than by the share of his fee which he would offer. The medical man was tempted to urge operations for the sake of the profit which might come to him. When, therefore, the American College of Surgeons was founded in 1913, stringent regulations against fee-splitting were made, and in the State of Colorado fee-splitting is now punishable by a heavy fine, or a gaol sentence, or both. Dr. Kickland is not altogether satisfied with the consequences of this severe repression, which still leaves untouched the injustice of unequal fees. The general practitioner in Colorado has now resorted to the practice of surgery himself. In one city, Dr. Kickland said, where there were only three men doing major surgery 12 years ago, there are now 28 surgeons of whom 19 engage in major surgery. The patient is liable to be deprived of the advantage of consultation and of the operative skill which comes with adequate surgical training and a practice

[1] Presse Méd., August 2nd, p. 1046.

limited to surgery, while the temptation to urge surgical interference with undue frequency has not been removed. At the same time the man who devotes years of his life to preparation for special practice is handicapped by unfair competition. Dr. Kickland's solution of a difficult problem is for the State to sanction special surgical practice only on production of a diploma granted after post-graduate study.

THE MEDICAL DEFENCE UNION.

Sir Herbert Waterhouse, happily recovered from his accident in the early summer, presided on Oct. 2nd at the annual general meeting of the Medical Defence Union, when a year of continued success and prosperity was reported. A membership of more than 16,000 testifies to the confidence which is placed in the Union by the rank and file of the medical profession, and the increasing membership has made it possible for the Union to improve its financial position. For some years the Union has had an agreement with the Yorkshire Insurance Company, whereby the first charge for indemnity against damages was borne by the funds of the Union up to an amount equal to 50 per cent. of the subscription income of the previous year. In consequence of the steady growth of the reserve fund it has now become possible to undertake a liability up to the entire amount of the subscription income of the preceding year, thus enabling the Union to insure against any claims in excess of that amount for a considerably smaller premium than has been paid hitherto.

Some of the cases quoted in the report give an indication of the charges which the conscientious practitioner may be called upon to face. One member had occasion to give an emergency certificate for removal to a mental hospital of a patient whose delusions made him dangerous to himself and others; he was detained for a week, and after his release the practitioner received a claim from a solicitor for the charges made by the guardians for the maintenance of the patient. The solicitor was advised that the certificate was given in good faith and with reasonable care, and the case was abandoned. Another member found it necessary to report a district nurse to the secretary of the local nursing association for criticising his methods, disobeying his instructions, and neglecting the patient, with the result that she was requested to resign. Two days later he received a solicitor's letter claiming damages for alleged slander. The solicitor was informed that the case would be defended by the Union, and nothing further was heard. Year after year the President finds it needful to emphasise the importance of an X ray examination in all cases of injury to a bone or a joint. In cases of refusal by the patient he advises all practitioners to preserve some definite record of the fact. Claims of alleged neglect are made repeatedly on the grounds that radiography was not advised, and that subsequent examination revealed a fracture. During the past year one member asked whether it was advisable to render his professional account to a patient with an injury of the ankle which he had failed to recognise as a fracture. An X ray taken a week later on her return home showed an incomplete fracture of the external malleolus with displacement. The member was advised to send in his account in the usual way, but the case serves to emphasise the President's warning.

Incorrect treatment is often alleged as an excuse for refusing payment of fees; a patient who had been treated by a member for a resistant patch of ringworm for about one month, afterwards consulted another doctor; when he received the account for the earlier attention he refused payment on the grounds that treatment had been faulty. On the advice of the Union the member threatened legal proceedings, with the result that the account was paid in full. Opinions sometimes differ on the question of what constitutes adequate care of a case, but it is remarkable to find that the charge of insufficient attention was made against one member who, for services including an antenatal visit, attendance at the confinement, eight subsequent visits, and a fee for an anæsthetist, sent in an account of five guineas. Upon the issue of a default summons on the advice of the Union the account was paid in full. Both the gratitude and the ingratitude of patients are proverbial and embarrassing, but the Medical Defence Union can shield the conscientious practitioner from at least one of them.

INTERNATIONAL CONGRESS OF HISTORY OF MEDICINE.

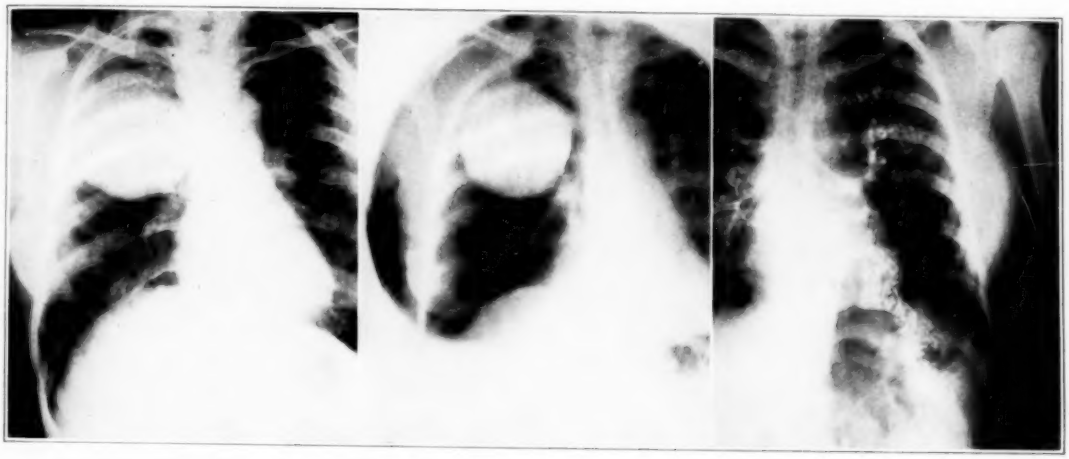
THIS congress was held at Rome from Sept. 22nd to 27th, under the Presidency of Sign. Mussolini and a committee of honour, including such well-known names as Profs. R. Alessandri, V. Ascoli, and R. Bastianelli, while the executive committee consisted of Prof. P. Capparoni, A. Castiglioni, A. Casarini, and D. B. Roncali. The work of the congress was divided among three sections: (1) Leprosy and the compulsory study of the history of medicine in the universities. (2) The cultural relations between Italy and other European nationalities in connexion with medicine and the natural sciences during the scientific renaissance of the sixteenth and seventeenth centuries. (3) Miscellaneous communications, such as papers on plague, the handwriting of Leonardo da Vinci, the influence of folklore on the evolution of medicine, on madder and spongia somnifera. The congress was granted a special audience by the Pope, who addressed the members on the importance and value of studying the history of medicine, and also had the advantage of inspecting the rare medical works in the Casanate library. Among those present at the congress were Dr. J. D. Rolleston, British delegate representing the Royal College of Physicians and the Royal Society of Medicine, Prof. G. E. Gask, the University of London and the Royal College of Surgeons, Dr. Vincent Dickinson, the Society of Apothecaries, and Dr. R. Whitehead the University of Manchester. The congress concluded by a banquet at the Hotel de Russie, at which about 140 guests were present.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A course of lectures, entitled Some Newer Therapeutic Agents, their pharmacological identification and tests, with some account of their uses in medicine, will be given by Dr. J. H. Burn, director of the pharmacological laboratories of this society, in the Lecture Theatre, 17, Bloomsbury-square, on Monday, Oct. 13th, and succeeding Mondays, at 5.30 P.M. Admission to the first lecture will be without ticket, but to subsequent lectures by ticket only.

A COURSE ON VENEREAL DISEASES.—A course of post-graduate lectures and demonstrations on Modern Methods in the Diagnosis and Treatment of Venereal Diseases is being given at the V.D. Treatment Centre, Municipal Clinic, 155, Regent-road, Salford, by Lieut.-Colonel E. Tytler Burke, director of the clinic, on Thursday, Oct. 9th, at 7 P.M., and at the same time each Thursday for 15 weeks. In addition, a course of four lectures and demonstrations on Congenital Syphilis is being given at the clinic on Oct. 9th, 16th, 23rd, and 30th.

DRS BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XVII. XVIII. XIX.



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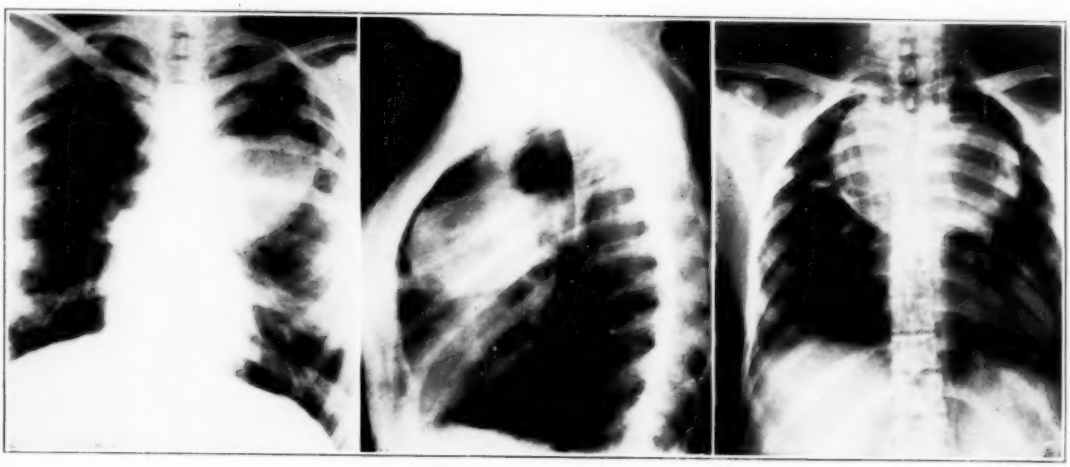

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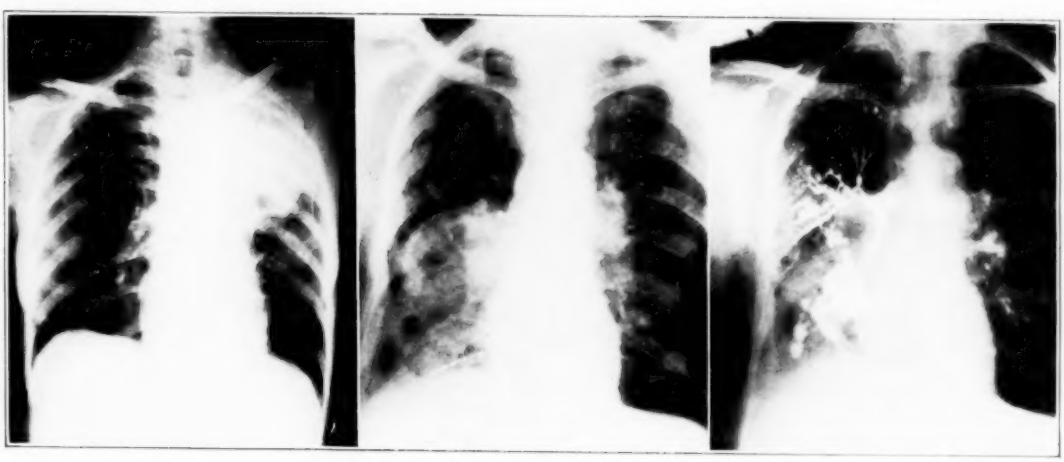
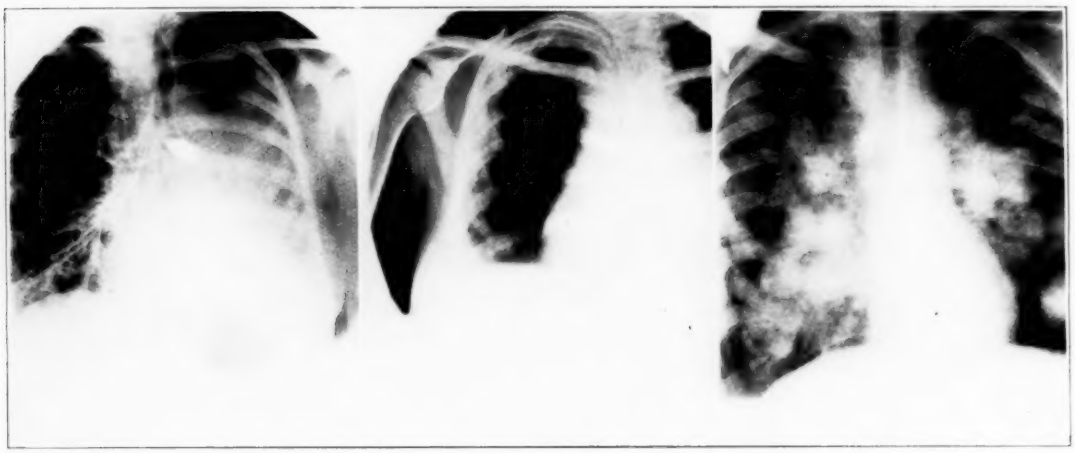


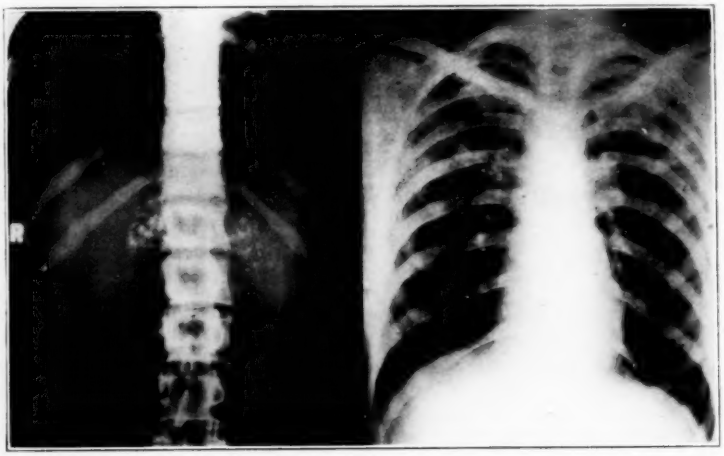
DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XXVI. XXVII. XXVIII.



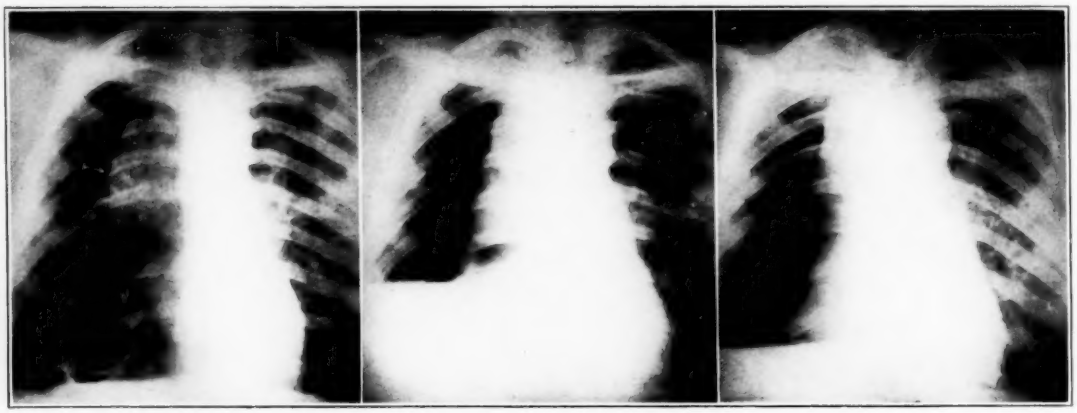
DR. THEODORE THOMPSON: RADIOGRAPHY IN ADDISON'S DISEASE.

XXIX. I. III.



DR. H. E. SYMES-THOMPSON: SPONTANEOUS PNEUMOTHORAX.

I. II. III.



CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXV.

RADIOGRAMS OF THE CHEST.

(WITH ILLUSTRATIVE PLATES.)

PART II.*

NEW GROWTHS OF THE LUNG.

IN the preradiological days medical literature contained few references to new growths of the lung and these only from the standpoint of morbid anatomy. Modern advances in surgery have now made possible the removal of some at least of the intrathoracic tumours, and the importance of early diagnosis is therefore paramount. The presence of a tumour may be suspected on clinical grounds, but the diagnosis is rarely sufficiently definite to justify an operation until the tumour has reached a large size. By means of X ray examination, however, it is mostly possible to detect a tumour at an early stage, and also to localise its position in the chest.

Only in the strict pathological sense is it possible to divide intrathoracic growths into those that are benign and those that are malignant. All forms of intrathoracic growth, whether of lung, mediastinum or even extrapulmonary, will deprive the patient of life in the long run by a process of compression. Tumours of the lung may reach a large size before any definite symptoms develop, whereas those in the mediastinum usually give rise to pressure symptoms when still comparatively small, owing to their confined space and the important structures in the mediastinum.

Benign Neoplasms.

Every variety of growth can be found within the thorax. The most common is the fibroma or a combination of fibroma with lipoma. Most if not all of the benign growths are extrapulmonary, in the sense that they do not originate from the lung tissue itself, but merely push the lung in front of themselves in the process of growth. The fibromata usually arise from the periosteum of a rib or from the endothoracic fascia. The X ray appearances are characteristic and consist of a well-defined rounded opacity, usually single, which can be shown to arise usually from the posterior part of the thoracic wall. The diagnosis can readily be made by the simple expedient of collapsing the lung, when the tumour will be shown to be extrapulmonary and not adherent to the lung itself (figs. XVII. and XVIII.). A fibroma has been known to arise in a bronchial tube. Hæmoptysis is the usual symptom. The patient, whose chest is illustrated in fig. XIX., had been sent to a sanatorium as tuberculous, owing to the hæmoptysis and the physical signs which followed collapse of the lung supplied by the blocked bronchus. Injection of lipiodol revealed the nature of the obstruction, and the small tumour was later removed with good recovery.

DERMOID CYST.

The teratomata or inclusion cysts have their origin either from the remains of the thymus gland or from the third or fourth branchial clefts. They are, therefore, always anterior in position, differing in this respect from the fibromata. They also are extrapulmonary, but, being more irritant in their nature, are apt to cause adhesions, and are not readily separated from the lung and pleura. They may contain any of the tissues—hair, bone, teeth, sebaceous material, &c. Another point of difference between them and the fibromata is that the former are much more irregular in shape though of equal density. Careful examination will sometimes reveal the presence of teeth or fragments of bone in the radiogram, while, clinically, hairs may be coughed up. The diagnosis of such tumours can be confirmed by radiogram taken in the lateral plane, when their anterior position will be seen (figs. XX. and XXI.).

CYSTS OF THE LUNG.

Simple cysts occur, though a differential diagnosis cannot be made radiologically from such cysts as the

* Part I., Normal and Infective Conditions, appeared in THE LANCET last week. Part III., on Tumours of the Mediastinum, will appear next week.

LEGENDS TO ILLUSTRATIONS APPEARING ON SPECIAL PLATES.

DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XVII. Fibroma.
XVIII. Same case as fig. XVII., showing the extrapulmonary situation of the growth by means of collapsing the lung.
XIX. Small fibroma blocking the main left descending bronchus with injection of lipiodol to show bronchial stenosis.
XX. Dermoid cyst.
XXI. Same case in lateral plane to show the anterior position of the tumour.
XXII. Hydatid cyst.
XXIII. Primary bronchial carcinoma of upper lobe.
XXIV. Primary bronchial carcinoma of lower lobe, simulating lung abscess.
XXV. Same case as fig. XXIV. after injection with lipiodol.
XXVI. Primary basal carcinoma of bronchus, showing bronchial stenosis after intratracheal injection of lipiodol.
XXVII. Endothelioma of pleura. To show the opacities on the pleural surface after collapse of the lung.
XXVIII. Metastatic deposits in lung (sarcoma in bone), showing "puff-ball" opacities.
XXIX. Carcinomatosis, showing the characteristic stippling, coarser than that of miliary tuberculosis.

DR. THEODORE THOMPSON: RADIOGRAPHY IN ADDISON'S DISEASE.

I. Radiogram showing partially calcified bodies corresponding in shape and position to the suprarenal glands on each side of first lumbar vertebra.
III. Radiogram of chest showing fairly extensive tuberculous infiltration of both lungs, the changes being more marked on the right side.

DR. H. E. SYMES-THOMPSON: SPONTANEOUS PNEUMOTHORAX.

I. Artificial pneumothorax (August 28th). Moderate collapse of the right lung. The arrow points to the superficial cavity, where it is presumed that the subsequent lung rupture occurred.
II. Artificial pneumothorax complicated by spontaneous pneumothorax (Oct. 23rd). Almost complete collapse of the lung. Free fluid reached the level of the fourth interspace.
III. The same (Nov. 8th). Right lung completely collapsed. The level of the fluid is lower, owing to air replacement having been performed.

hydatid or echinococcal cyst. Hydatid cysts may be found in any organ, but are most commonly seen in the lung. They show as well-defined rounded or oval opacities with a homogeneous centre (fig. XXIII.). They are commonly situated in the right lower lobe. They may be single or multiple, and show up clearly in contrast with the translucent surrounding lung tissue. They set up much local irritation, and the lung tissue in their neighbourhood is liable to become congested and fibrosed. Not infrequently the diagnosis is made clinically by the expectoration of hooklets or other evidence.

Malignant Neoplasms of the Lung.

Of the malignant neoplasms, carcinoma would appear to be the most common. In spite of contrary evidence given by some writers, in our view there is no doubt that primary carcinoma of the lung is definitely on the increase. In the *Fortschritte f. Radiol.* for 1924 the incidence of primary carcinoma arising from the bronchus of the lung is given as from 4 to 6·3 per cent. of all carcinomas of the body—an amazingly high figure. On the other hand, primary sarcoma of the lung is of much less frequent occurrence than was formerly thought to be the case. Indeed, there is the gravest doubt as to whether a primary sarcoma ever does arise from the lung, or whether many of the cases of so-called sarcoma may not have been carcinoma of the small-celled variety, or possibly large metastases from an undiscovered small sarcoma elsewhere in the body —e.g., in the prostate.

PRIMARY BRONCHIAL CARCINOMA.

This arises from the mucosa of a large bronchus, and rapidly causes stenosis of the bronchus and consequently collapse and air absorption of the lung supplied by it. For convenience it is well to divide bronchial carcinoma as met with clinically into (*a*) upper lobe carcinoma; (*b*) hilar carcinoma; (*c*) lower lobe carcinoma.

Upper Lobe Carcinoma arises, as has been stated, from a large bronchus close to the bifurcation of the trachea. As soon as it has blocked the bronchus the part of the lung supplied by it collapses, so that what the radiogram shows is not growth, but the upper lobe of the lung, opaque and airless, the line of the opacity being sharply demarcated by the interlobar septum (fig. XXIII.).

Hilar Carcinoma.—Some of the carcinomata originating from the region of the hilum, in addition to causing stenosis of the bronchus, appear to invade the bronchial wall, traverse it and spread to the lung tissue. The growth is most irregular in form, and there are heavy linear processes seen extending into the lung tissue. There is much general enlargement of the bronchial glands. At times they may be mistaken for interlobar empyema and nothing but the closest coöperation between clinician and radiologist can avert this error.

Lower Lobe Carcinoma.—This type of primary bronchial carcinoma is difficult to diagnose. The lower lobe is irregularly opaque, and there is almost universally early pleural involvement with effusion, which also tends to obscure the condition. To these difficulties we have to add the early occurrence of degenerative processes (central necrosis, &c.), so that the distinction between carcinoma, abscess of lung, or even bronchiectasis becomes increasingly difficult. Nor does the clinical evidence assist greatly. At times characteristic cells may be found in the pleural effusion. As a general rule, the clinical evidence, as in all forms of lung neoplasm, are cough of a peculiarly irritative and non-productive character, occasional hæmoptysis, increasing breathlessness, and loss of weight. It is a curious fact, and one well recognised by clinicians, that after an early more or less acute onset, with some evidence of bronchitis with fever, the symptoms subside and the patient for a time appears to be better; at times this has given rise to the belief that there has been an error in diagnosis (figs. XXIV. and XXV.). Some German writers have described a form of bronchial carcinoma which they have called the cavernous carcinoma. It is probable that these cases are those in which necrosis and central softening have taken place and are not a separate kind of carcinoma.

DIAGNOSIS.

In diagnosis of the various types of carcinoma, there are two modern aids:—

1. *The Production of Artificial Pneumothorax.*—This is possibly of greater value in extrapulmonary growths, and at times the distinction between the collapsed lung and the denser opaque growth is very remarkable.

2. *Intratracheal Injection of Lipiodol.*—In carcinoma the stenosed bronchus is seen to fill irregularly or even in a "rat-tail" manner, and when this is noticed the diagnosis is almost conclusive. If the bronchus is completely stenosed the lipiodol is seen to terminate abruptly (fig. XXVI.); if only partly stenosed, an irregular filling with lipiodol will be noted.

ENDOTHELIOMA OF PLEURA.

Primary endothelioma is rare, but when it does occur, a characteristic blood-stained effusion, in which may be found typical cells, is invariably present. If the lung be collapsed, irregular opacities can be seen on the pleural surface or viewed directly with the thoracoscope (fig. XXVII.).

METASTATIC TUMOURS OF LUNG.

There is no definite radiological difference between the appearance of metastases of sarcoma and carcinoma. As a general rule those of sarcoma grow with amazing rapidity and cause a rapid fatal termination, whereas the rate of growth in carcinoma is slower and less rapidly fatal.

In both, the lungs appear to be studded with the characteristic "ping-pong" or "puff-ball," somewhat woolly opacities, varying in size from a bean to a small tennis ball (fig. XXVIII.).

MILIARY CARCINOMA OR CARCINOMATOSIS.

In this condition the lungs are seen to be completely studded with stippled shadows, usually somewhat coarser and denser than is the case in miliary tuberculosis. The spread is either by the blood stream or through the lymph stream, and there is frequently involvement of pleura as well as lung (fig. XXIX.).

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and
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CENTENARY OF CUMBERLAND INFIRMARY.—This Carlisle hospital last week celebrated its centenary. It is proposed to commemorate it by raising £10,000 for the building, equipment, and endowment of a new operating theatre.

SPECIAL ARTICLES

AN OUTBREAK OF SCARLET FEVER AT A PREPARATORY SCHOOL.

BY J. A. GLOVER, O.B.E., M.D. CAMB., M.R.C.P. LOND.,

AND

F. GRIFFITH, M.B., D.P.H.,

MEDICAL OFFICERS OF THE MINISTRY OF HEALTH.

THIS outbreak, which ran on through three consecutive terms, deserves record not only on account of the high attack-rate (some 60 per cent. of the boys), and of the long infectivity of the convalescents shown by the occurrence of an unusual proportion of secondary or return cases, but chiefly because in all cases in which the type of infecting hæmolytic streptococcus was determined (14 out of 30), as well as in two so-called pure-plate carriers who were suspected of having been secondary sources of infection, one serological type was found—viz., scarlatinal streptococcus type 2.

Our investigation did not begin until the second term of the epidemic. The school consisted of about 50 boys (the number varying slightly in each term), all boarders between 8 and 14 years of age, housed in a modern school-house near the sea. No cases of scarlet fever had occurred amongst the pupils at the school for more than 40 years. Two boys were, however, immune by attacks previous to entry.

CHRISTMAS TERM, 1929..

The outbreak began on Nov. 12th, 1929, with seven cases in the Christmas term, the last on Nov. 21st. Each patient without exception was promptly removed to hospital immediately the disease was diagnosed, usually within a very few hours after the onset, and remained there at least six weeks. No bacteriological investigations were made during this term, but on other evidence the probable source of infection seemed to be a boy (A), who had developed scarlet fever on August 29th, 1929, during the summer holidays. A returned to school on Oct. 20th (seven and a half weeks after the onset of his attack). On Oct. 26th he had a chill and high temperature, and was confined to bed (isolated in the sick bay) for several days. The first boy to develop scarlet fever in the school (Case 1) was in A's form, and fell sick on Nov. 12th, some days after A's release from the sick bay, and 75 days after A's onset. A shared a dormitory with six other boys. One was taken home immediately it was known that Case 1 had scarlet fever and this boy escaped infection. Of the other five boys in A's dormitory three sickened, Case 2 on Nov. 13th, Case 5 on the 17th, and Case 6, a boy who slept between A and 5, on the 19th. There is, therefore, considerable evidence for the view that A was the source of infection. Moreover, it was found later, 155 days after his onset, that A was carrying type 2 scarlatinal streptococcus, which subsequently proved to be the cause of the outbreak.

LENT TERM, 1930.

After the occurrence of Case 7 on Nov. 21st, nearly four weeks of the Christmas term passed without further cases, and as the boys were then dispersed for the Christmas holidays of more than a month it was hoped that the outbreak was at an end. This hope was not realised, for, some ten days after the beginning of the Lent term, four cases of scarlet fever occurred in rapid succession. At this point our advice was sought as to the possibility of discovering the source of the recurrent infection. To do this it was necessary in the first place to determine the type of hæmolytic streptococcus infecting the four patients, and secondly to search for any carrier or carriers of that type, who might have reintroduced the infection.

First swabbing.—Accordingly on Jan. 31st swabs were taken from the following boys:—

(1) The four patients (Cases 8, 9, 10, 11) just removed to hospital; (2) from the six[1] boys (Cases 2 to 7) who had returned to school after having had the disease in the previous term; (3) from A the suspected original source of infection in the previous term; (4) from eight other boys, contacts or suspects, including one who had had scarlet fever more than four years previously.

The results were as follows:—

(1) All four patients gave copious growths of scarlatinal streptococcus type 2; (2) two of the six boys who had the disease in the previous term (Cases 3 and 6) were carrying type 2; (3) A was also carrying type 2, but so sparsely that the plates made direct from two swabs were both negative, the streptococcus being discovered only through the inoculation of a mouse with a broth culture from the swab; (4) of the eight other boys, only the boy who had had scarlet fever four years before was carrying hæmolytic streptococci and these were of a type which could not be identified with type 2 or with any of the chief scarlatinal types.

The carriers of type 2 discovered were obviously of first importance as possible sources of the reintroduced infection, and of these Cases 3 seemed the most likely. His swab had given a pure and profuse growth of hæmolytic streptococci, and his tonsils were enlarged and somewhat unhealthy in appearance. He had been sleeping in the next bed to Case 8 (the first case of the Lent term) since the beginning of term—ten days—and was in the same form. Moreover, he proved a persistent carrier, giving pure cultures, until his tonsils were removed, when he almost immediately became free. Case 6, whose swab had yielded a less profuse growth of hæmolytic streptococci, had had scarlatinal rheumatism complicating his attack and had returned to school late on Jan. 26th. His carrier condition cleared rapidly, and he was released from isolation on Feb. 21st. Both 3 and 6 were isolated on the day after the swabs were taken on account of the appearance of the plates without waiting for the completion of the agglutination tests. We have already stated that A gave a negative plate from each of two swabs and that he was carrying type 2 was only found after resort to mouse passage. In view of this, and as five months had elapsed he was not isolated. Despite the isolation of the two profuse carriers (3 and 6), cases of scarlet fever continued to occur at short intervals through the term.

Second swabbing.—On March 14th all the boys remaining in school, and certain of the staff, were swabbed.

[1] Case 1 had not returned to school, having infected his sister at home on his discharge from hospital where he had been detained six weeks.

Out of 23 boys 6 (26 per cent. [2]) were carrying hæmolytic streptococci, but only two of these were identified with scarlatinal type 2. In the case of one of these boys, B, carrying type 2, the plate showed a pure and profuse culture. B had had a slight sore-throat on Feb. 22nd, and as circumstances made it appear probable that since then he had been the source of infection in two or three cases, it was thought that he had probably had an attack of "scarlatina sine eruptione" on that date.

The other boy carrying type 2 had had scarlatina in the Christmas term (onset 121 days before the date of swabbing); his direct plate was negative, and that he was still a carrier was only discovered by the mouse test. In view of these facts he was not isolated.

The history of the four boys, referred to above, who at this swabbing on March 14th were carrying hæmolytic streptococci *not* identified with any of the four scarlatinal types, is of some interest. One was A, who had been attacked by scarlet fever 197 days before, and had carried the type 2 strain for at least 155 days. A second boy (Case 29) developed scarlet fever four days later, on March 18th, and when swabbed on March 24th, yielded a profuse culture of type 2. A third boy (Case 33) developed scarlet fever 76 days later, after giving a negative swab eight days before onset.

In all 22 cases occurred in the Lent term, and in view of the persistent nature of the outbreak, the school authorities antedated the end of the term to March 18th.

SUMMER TERM, 1930.

The school reassembled on April 25th for the summer term. Certain patients of the previous term had not yet returned, but there were three new boys. Four cases occurred in this term, the first (the thirtieth of the whole series) on May 11th, the last on May 29th, making the thirty-third case of the series. The first patient was a new boy (Case 30) who came to school on May 6th, just released from quarantine after whooping-cough. He happened to arrive at school at the time at which Case 24 returned, and Case 24 assisted him to unpack. The suspicion that he might have contracted scarlatina from 24 was not supported bacteriologically, since the latter, when swabbed on the 21st, was found not to be a carrier. It is more likely that the infection reintroduced this summer term was derived from a member of the domestic staff, who was in close contact with the new boys. This lady (C) had had scarlet fever in childhood; her tonsils were large and somewhat unhealthy, and she had an old history of quinsy. In the Lent term she had a severe attack of tonsillitis, and was in isolation from Feb. 25th until March 13th, when she went home [3] and did not return to the school until the beginning of the summer term. Her medical adviser thought the condition might be diphtheria, and swabs from her throat taken about March 1st were examined, though not by us, and pronounced negative, but probably they were only examined for diphtheria organisms. Tested by us on May 21st this lady's swab gave a copious growth of scarlatinal streptococcus type 2, and she has continued to "carry" for several months.

There is thus a strong probability that her attack of tonsillitis during the Lent term was the result of infection with the prevalent type 2 streptococcus, which persisted in her throat, and was transmitted to the above-mentioned four patients in the summer term. These patients were all small boys with whom her duties brought her into close contact. She had come first to the school at the beginning of the Christmas term, and so might conceivably have been the original source of infection if she was a carrier then. The earlier cases, however, occurred in somewhat older boys with whom she was but little in contact. Moreover, the evidence that the boy A was the original source seems overwhelming.

Third swabbing.—This was carried out on May 21st to ascertain the proportion of carriers. All the boys remaining in school (43), all the teaching staff (6), and all the domestic staff (11) were swabbed.

Of the 42 boys examined, 23 had had the disease. Four boys, all old patients (one 112 days after onset) still carried streptococcus type 2, but all sparsely; seven others (among whom were five old patients and one new boy) carried hæmolytic streptococci of strains other than type 2, none being recognised scarlet fever strains; one of the above five was A (now 265 days after the onset of his scarlatinal attack) and another was Case 1 (now 190 days after his onset). Thus, the carrier-rate of hæmolytic streptococci of all strains was still 26 per cent. Of the 31 boys who gave swabs without hæmolytic streptococci on this date (21/5/30) 11 were old patients and one (B) had probably had "scarlatina sine eruptione." Of the 16 other "negatives" two subsequently developed scarlet fever; the first (Case 32) who had been negative when swabbed on two previous occasions in January and March was attacked four days later on May 25th; the second (Case 33), who was not swabbed in January but in March was found to be carrying a fair number of heterologous H. streptococci, developed the disease eight days later on May 29th.

Of the *teaching staff* two out of six carried hæmolytic streptococci, but in both cases the strains were heterologous. Of the domestic staff of 11, 5 carried hæmolytic streptococci, two of the strains being type 2. One of these staff carriers was the lady C, to whom reference has already been made, as the probable source of the summer term infection. She was immediately isolated. The swab from the second (a parlourmaid who waited on the boys at meals) gave a negative plate, and only by mouse test was she shown to be a carrier; she was not isolated.[4]

The recurrence of the scarlatinal outbreak during the Christmas and Lent terms has been attributed respectively to Case A and Case 3 (and, perhaps, to Case 6). In addition, the following return cases are known to have occurred elsewhere than at the school. Case 1 infected his sister in the Christmas holidays; Case 12 infected two maids at home; Case 19 an aunt, whilst Case 28 gave rise to two return cases in different places (one 64 days, the other 73 days after his own onset).

The clinical type of the boys' cases was one of medium severity. Two patients had endocarditis, and there were many cases of adenitis. Rashes were profuse.

Discussion.

The distance and other circumstances prevented the completion of the bacteriological picture, but even in its imperfect form it is instructive. In every case save one (14 out of 15) where a swab was obtained from a patient early in his attack, hæmolytic streptococci, identified serologically as scarlatinal streptococcus type 2, was obtained in nearly pure culture. Bacteriological investigation of suspected carriers seemed in each term to explain how and by whom the infection was carried on from the previous term. Several different ways in which scarlet fever is spread and carried on from outbreak

[2] This high carrier-rate of hæmolytic streptococci in a community where "dropping" cases are occurring has been observed in scarlet fever in a boarding school on a previous occasion (Nasopharyngeal Epidemics in Public Schools, Glover, J. A., Brit. Med. Jour., 1928, ii., 91; Proc. Roy. Soc. Med., 1928, xxi., 1605), and it is possible there is a similarity in such cases with the phenomenon of the danger line seen in cerebro-spinal fever—i.e., that, when the carrier-rate of the meningococcus—i.e., the carrier epidemic—in a community rises to a certain height (20 to 30 per cent.) clinical cases of meningococcal meningitis will probably occur. (Glover, Medical Research Council, Special Report No. 50, p. 140.)

[3] She thus escaped our swabbing of March 14th.

[4] The pneumococci grown from these swabs were also isolated and typed. 46 of the 60 swabs (77 per cent.) were carrying pneumococcus and the swabs from the boys showed some evidence of cross-infection. Eight boys were carrying the same strain of type 6, whilst five boys and one of the domestic staff were carrying type 23.

to outbreak were all illustrated. Infection from a still infectious convalescent, the typical "return" case, is well shown in the cases of A and 3, infection from a patient convalescent of "scarlatina sine eruptione" is illustrated by B, whilst C affords an example of infection by a chronic carrier, who, although immune to scarlet fever from previous attack in early youth, yet is probably reinfected with scarlatinal streptococcus from her attendance on patients just after their onset so that she suffers from tonsillitis severe enough to be thought diphtheritic, and two months later is found to be a carrier of pure and profuse type. The influence of nasopharyngeal abnormality in prolonging the carrier condition and infectivity is shown by Case 3 and by C. The well-recognised influence which a subsequent minor infection may have in making a patient infectious again after a period of non-infectivity is seen in the case of A and in Case 28.

Prolonged infectivity is well known, and many instances are given in the literature,[5] but that such a high proportion (8 return cases from 34 cases = 23 per cent.) of known return cases should arise in good hygienic conditions is strong evidence of the prolonged infectivity of this particular strain. The hospital proportion of return cases is usually stated as 4 per cent. and the very efficient isolation hospital, to which these patients had been removed and in which a six weeks' detention is the regular rule, had been almost completely free from return cases for years.

That many convalescents continue to carry hæmolytic streptococci of scarlet fever type without being infective has been observed by Griffith and Gunn,[6] who showed that of 100 patients swabbed, on the day prior to their discharge from hospital after scarlet fever, 50 carried hæmolytic streptococci, yet none gave rise to "return" cases. The question of attempting to prevent the spread of the disease by immunity methods was discussed at various periods in the outbreak, particularly after the occurrence of the first four cases in the Lent term. A method sometimes successfully used in outbreaks in children's hospitals is to produce passive immunity (lasting about a fortnight) by the injection of an anti-scarlet fever serum. The immunity produced by this method is, however, too evanescent for use in a boarding school, and has the further disadvantage that it involves the risk of sensitising the boys to serum, if serum treatment be required later. Active immunity by the Dick method takes too long and is too uncertain. The small experience of this method in English schools has not been encouraging, though for the use of a hospital staff it may be very valuable. For these reasons immunity methods of prophylaxis were not advised.

That previous "carrying" of a heterologous strain of hæmolytic streptococcus does not necessarily confer immunity against an epidemic strain like type 2 seems to follow from Case 29 (found carrying heterologous strains four days before onset) and Case 33 (76 days before onset).

Various prophylactic precautions were adopted; for example, in the summer term all boys who had had the disease ate at separate tables at meals, worked in separate forms, and slept in separate dormitories from those boys who had not had it. Temperatures were taken daily, teeth were cleaned, nasal douching and gargling done three times a day under supervision. The nasal douching and gargling were not advised by us, and that such precautions are of little avail is shown by the fact that on May 21st, after nearly four weeks of gargling and douching, 11 out of 43 boys were still carrying hæmolytic streptococcus.

It must indeed be confessed that the results of all the precautions taken, including immediate isolation and hospitalisation of patients, were disappointing.

[5] See particularly Dr. Miles Arnold, p. 252, Reports on Public Health and Medical Subjects. Report 35, Ministry of Health.
[6] W. Gunn and F. Griffith: Jour. of Hyg., 1928, xxviii., 50.

POST-GRADUATE COURSES AT THE TEACHING HOSPITALS.

SPEAKING at the Post-graduate course at Charing Cross Hospital on Oct. 4th, Dr. F. H. YOUNG took as his subject the

Post-sanatorium Treatment of Tuberculosis.

He said that 85 per cent. of middle-class patients who enter sanatoriums came out with the disease quiescent, but that after 18 months more than half of them had suffered relapse. The reason for this was that practitioners were accustomed to think of pulmonary tuberculosis as an acute disease, instead of a chronic disease with acute exacerbations. Post-sanatorium treatment was the province of the family doctor, and on the return of the patient to his home the doctor should enter in his notes the state of the patient, the type of his disease, and the exact point reached in its course. Pulmonary tuberculosis was at first a local condition from which arose a general intoxication; in some cases the local process might progress without marked toxæmia, and in others the toxæmia might become severe without advance in the local lesion. Dr. Young divided cases into three types: first, a group in which the general resistance was high, and which included those patients who had coughed for 10 years before consulting a doctor and who had possibly had a cavity for 5 years; secondly, there was the type of case which often occurred in girls of 18 showing loss of weight and malaise with an occasional râle in the chest; X ray examination would show a deep-seated lesion which would progress like wildfire; thirdly, there was the type of patient with a large local lesion which settled on rest but flared up on exertion.

After deciding to which type the patient conformed the second action of the practitioner should be to find out what treatment the patient had received at the sanatorium, how he had responded to it, and, in particular, how much exercise he had been taking when dismissed. Next, the doctor must decide whether the environment in which the patient lived was responsible for the first breakdown, and if he were returning to the same environment attempts must be made to modify it. Then the psychological state of the patient must be studied; worry would often initiate a relapse, and must be avoided if possible. Finally, a careful physical examination must be made and the findings recorded on an accurate chart. This would be invaluable in the case of patients who were unable to afford frequent radiograms. Signs developing in a part of the thorax previously free were more important than the persistence of the signs found on return from the sanatorium. If there had been no X ray, one should be taken, and it must be remembered that under ordinary conditions the radiologist alone could not tell whether the disease was active or not.

On leaving the sanatorium in a state of quiescence, said Dr. Young, the patient would have no toxæmia, probably some cough and, possibly, tubercle bacilli

in the sputum; the weight might be normal or well above the normal, but during the first few months any excess would probably be lost. The treatment of most value in a case of pulmonary tuberculosis was rest, and if fresh air could only be gained at the expense of rest the patient had much better remain in his back room. His home should be in the country if possible, but London air was not bad for patients unless they had much fibrosis and bronchitis. He should sleep in a single bed, preferably with a room to himself, where he could retire for rest whenever he felt at all tired. The windows should, of course, be adequate and open. His children should be kept away from him as far as was reasonably possible. As to work, men had been killed in hundreds by being sent to poultry farms; any out-of-door job was strenuous, and a man who had been a clerk all his life had to exert himself to the uttermost to work 10 hours a day at a task which was entirely strange to him. Unless it was definitely harmful, a man should carry on with the work to which he was accustomed; a long train journey, possibly without a seat, was not balanced by extra fresh air if the man lived in the country at a distance from his work. Rest was the important factor, and certain of Dr. Young's own cases in the city spent an hour at lunch time lying down in one or other of the city churches. The patient should be encouraged to work for a salary on which he could live, and not to press for advancement. His week-ends could be used as times of extra rest when he could if necessary retire to bed for a day and a half. Regular supervision was essential, and a monthly assessment of his condition would not only make it possible to observe dangers early, but would calm the patient's anxiety about himself. Food should be good, served regularly, and suitable to the tastes of the patient. If the patient wished to marry and there was to be no increase in strain or financial stress in consequence, he would be well advised to get married; there should be no children for a year or two, and in the case of a woman not until 5 years after leaving a sanatorium. The monthly assessment should include a careful examination of the local lesion, and a series of comparative radiograms should be taken, if possible. A temperature chart was a useful indication of the degree of toxæmia if it could be kept without causing undue anxiety; a swing below the normal line in the mornings had more significance than a slight irregular evening rise. The pulse-rate was useful if charted accurately. In the general condition points to observe were slight tiredness where none was previously felt, and a fall in weight; it must not be forgotten, however, that there was an annual weight cycle which need cause no alarm. Shortness of breath might be due to fibrosis and bronchitis, or might be a toxic dyspnœa accompanied by a rise of temperature; it should be treated, in the second case, by an increase of rest. If rest was already extended to the maximum the help of a consultant should, for the first time, be sought, and further measures such as pneumothorax and phrenectomy might be considered. If all was going well the amount of exertion could be increased gradually. If the patient were symptomless for two years he might lead an ordinary life avoiding undue strain; if he were well for five years he might lead a normal life but should rest after any severe strain.

Sanatorium treatment, the speaker said, was valuable in helping the patient through the rising stages and through the grading of exertion; experience showed that difficulties arose in the course of tuberculosis, not through the absence of early diagnosis, but through failure to maintain the results achieved during the acute period.

Diagnosis of Renal Pain.

Speaking of renal pain, in a lecture given at the same course, Mr. C. JENNINGS MARSHALL said that the puzzling type of pain in the loin, of which so many patients complained, was often not cured by such measures as appendicectomy, fixation of the colon or kidney, gynæcological interference, or even diet and drugs. Causes could be grouped as renal and non-renal. Among the non-renal causes tabes dorsalis must of course be considered; tuberculosis of the spine was another possible cause, and in later life spondylitis deformans or scoliosis might give rise to pain. A rare cause was erosion of the vertebræ by an abdominal aneurysm, and it must be borne in mind that a lateral as well as an antero-posterior radiogram was essential in making the diagnosis. Secondary carcinoma of the spine with a symptomless primary growth in the stomach, breast, prostate, thyroid, and occasionally kidney, might be found. Fibrositis of the loin muscles was a very real cause of pain in this region, and nodules of fibrous tissue could be palpated if the muscles were relaxed; the condition responded well to massage and diathermy. Among bowel causes the appendix was the last offender to be considered. A common cause was a distended cæcum, recognisable on palpation; a sagging ascending colon might also be responsible, but fixation was not to be recommended in these cases as the end-results were not good; diagnosis could be made by radiography. Distended cæcum was often associated with a sagging colon and frequently gave rise to attacks of pain resembling appendicitis. In children, inflammation of the mesenteric glands must be remembered as a common cause of pain; tuberculosis of the glands lying along the right side of the mesentery was one type of inflammation, but healed calcareous glands between the ileum and ascending colon were liable to recurrent attacks of infection from the bowel, and were sometimes benefited by the removal of the appendix as a source of sepsis. Such calcareous glands could, of course, be seen radiographically. A second type of mesenteric adenitis was common in children, and usually simulated appendicitis closely. The temperature generally rose more suddenly than in appendicitis to about 101° or 102° F. There was not much nausea or disturbance of appetite, and there might or might not be furred tongue or bowel disturbance; commonly, looseness of the bowels preceded the attack. Tenderness would be found above and below the umbilicus along the right border of the rectus and the child would complain of pain on movement of the right leg; on opening the abdomen the peritoneum would be found to be œdematous and the glands much enlarged. Only rarely was the diagnosis of this condition from appendicitis so certain that it was safe to leave the case without operation. A chronic form of the same condition gave rise to pain of a similar distribution; usually the glands could be felt on palpation and a diagnosis of chronic appendicitis should be avoided. Renal causes, other than calculus, included tumour of the kidney, usually associated with bleeding; but occasionally when the tumour was not in connexion with the calyces or pelvis no hæmorrhage would be found. Tuberculosis might also exist unsuspected if it were so enclosed that the escape of pus was prevented, and a pyonephrosis might be present for some time without discharging pus into the bladder. As a rule, however, discharge occurred sooner or later. Renal calculus was usually

revealed by radiography and translucent stones were rare; in any case these would be revealed by pyelography. The persistence of a few red blood cells in the urine, seen microscopically, was a valuable indication of the presence of a stone. Slight and early cases of hydronephrosis gave rise to attacks of renal colic identical with those produced by a calculus, but there was no hæmorrhage, and pyelography would show the obliteration of the pyramids, with clubbing of the shadows of the calyces.

Ureteral strictures, said Mr. Marshall, was a definite entity and a cause of pain, but the normal constrictions of the ureter at various points must not be taken as pathological. Strictures might follow the passage of a stone, or it might occur independently as a result of a patch of ureteritis; the ureter was as liable to infection as the kidney, and probably the infection was blood borne from septic teeth and tonsils. Nephritis dolorosa—a very rare condition, but one which certainly existed—might cause persistent pain, and was essentially a neuralgic condition of the kidney. Mr. Marshall recalled a case on whom he had performed a pyelography without finding evidence of a calculus or stricture; no septic foci were present. The kidney was decapsulated with temporary relief, but recurrence of the pain led to a second operation for destruction of nerves to the kidney—also without success. Finally nephrectomy brought relief; a few sclerotic areas in the kidney were the sole pathological finding.

Disorders of the Menopause.

Mr. J. BRIGHT BANISTER, speaking on disorders of the menopause, said that the menopause was a condition common to both sexes, and only a small part of it was due to changes in the generative organs. The local changes in women consisted of a retrogression of certain organs and tissues occurring between the ages of 45 and 55 years; a gradual atrophy began in the uterus and its lining membrane, and was followed by an atrophy of the ovary. The labia showed a diminution in size, and there was a corresponding constriction of the vagina and reduction in size of the cervix. The ovary contracted, ova ceased to ripen, and there was marked deposition of fibrous tissue.

Gynæcological symptoms of the menopause included alterations in menstruation, usually taking the form of delay in the appearance of the periods and diminution in their duration. Alternatively, but less commonly, the intervals might be longer but the discharge more profuse for a period of 3 to 6 months; or the periods might be more frequent and more profuse for as much as a year. Irregular hæmorrhage, however, was emphatically not a symptom of the menopause, and should never be allowed to pass without an examination. Carcinoma of the cervix and of the uterus might be missed repeatedly if this sign, which was a challenge to the practitioner, were ignored. Similarly, any increase or change in vaginal discharge at this time called for thorough investigation. Irritation of the vulva was a common symptom at the menopause and called for local treatment. It was a stepping-stone in the atrophic degenerative process which might end in leucoplakia or carcinoma vulvæ, and it might also be a symptom of general disease. Vasomotor disturbances at this time included flushings, once said to be due to atrophy of the ovary; they were probably the result of restlessness of the endocrine system in its attempt to adjust itself to the new order; at present it was thought that the hypotensive action of the ovaries having been removed the hypertensive action of the adrenals came into play. Vasomotor phenomena were more marked during mental disturbance than during physical work, and dizziness, tingling of the extremities, and palpitations were all expressions of the same condition. In treating these symptoms it was necessary to impress on the patient that her sufferings were temporary. Many patients were in a state of nervous irritability at this time, and much could be done with old-fashioned bromide. In addition, this was a time when patients might fairly be given some glandular extract, and he had found ovarian extract grs. 5 with thyroid gr. 1 to give the best results. A reliable product must be used.

As a result of metabolic changes, said the speaker, many women were much distressed by obesity; nine out of ten persons in later life ate too much, partly because they did not realise that their needs were less. The patient should be advised to reduce her diet, and in addition thyroid and whole pituitary extracts, given with care, were most useful. Small doses should be given at first, and the patient watched for any signs of intolerance of thyroid; at the menopause the thyroid either diminished in size, or, less commonly, became more active. The course could begin with thyroid gr. ½ and whole pituitrin gr. ½; if no untoward symptoms were observed at the end of 14 days, the dose was to be doubled; at the end of another 14 days grs. 2 of each might be given, and then the dose might be increased by gr. ½ every 14 days until grs. 3 of each were being taken. It was almost unknown for a woman not to diminish in weight on this dose. Any tendency to diabetes, gout, chronic eczemas, and rheumatic conditions became more marked at the menopause, and it was important to be on the watch for them and to treat the general condition. Nervous irritability often characterised the years of the menopause, usually taking the form of an anxiety neurosis. If the mental condition was normal at the beginning the patient should be treated on common sense lines, with the suggestion that age was inevitable, and that there was an opportunity for everyone to be of use. It was not necessary for this state of mental instability to progress, in his opinion, unless there were some previous tendency towards lack of mental balance. It was essential that the patient should realise that her state was temporary and common to everyone.

Three glands, he said, were particularly concerned in the disorders of the menopause—the ovary, the pituitary, and the adrenal; the thyroid played a varying part. Headache associated with the menopause was commonly of a definite type, being short in duration, severe, and situated in different parts of the head. It usually occurred in women of the nervous, apprehensive type who were easily tired, and in whom the temperature was subnormal and the skin dry. They resembled early cases of myxœdema, and in 80 per cent. of them the headache could be cured by a regular régime to eliminate constipation, and by gr. 1 of thyroid thrice daily for three months. If the headaches were very severe the addition of luminal often cured them completely, and if the thyroid was continued the luminal could be gradually dropped. As had already been stated, the menopause was not confined to the female sex, and in Mr. Banister's opinion some of the cases of sudden death of business men were due to lack of care at a time when the vasomotor system was in a state of imbalance. The duration of the menopause varied. It usually began with the menstrual symptoms, but occasionally preceded them or followed the cessation of the periods. Symptoms might persist for as much as three years, but it was unwise to make any prophecy to the patient.

The Treatment of Some Septic Infections.

Prof. C. A. PANNETT, in discussing septic infections at the St. Mary's Hospital Post-Graduate Course, drew attention to the extreme paucity of real knowledge of local and general defence against septic infections though the number of organisms concerned was small, their characteristics were known, and a very great amount of research had been conducted for the elucidation of the problem. In spite of all, the surgeon often felt himself an onlooker only occasionally able, but still very certainly able, by rather gross methods favourably to influence the progress of the disease. He had come to recognise of what paramount importance are the natural resources of the body in recovery. These must be conserved, fostered, exploited. Hence it had come about that time-honoured measures such as the free evacuation of pus through a wide opening, the incision of inflamed areas to relieve tension, the frequent dressings and careful removal of foul discharge had all been subjected to the fierce eye of modern criticism, with the result that ideas had been adjusted and new techniques evolved. He illustrated these views by an account of acute osteomyelitis in children. After a brief consideration of the pathology and its bearing on treatment he pointed out that the minimum of operative interference was most effective. Large openings into the medulla of the bone gave twice the mortality of less restricted operations and diaphysectomy must be absolutely rejected. In the St. Mary's Surgical Unit multiple drillings of the metaphysis with a freshly sterilised tool for each hole were carried out and the drilling stopped as soon as the pathological area was overstepped, as proved by the material encountered. The resulting wound was then treated by the method of Winnett Orr, which he considered one of the greatest advances in treatment. This method was based upon the principles of Lister, Hilton, and Almroth Wright, and perhaps those much debated phenomena of Besredka also played a part. The method consisted in the complete encasing of the limb in a plaster-of-Paris splint after packing the wide open operative wound with vaseline gauze. No sutures of any kind were used to coapt the wound edges. The dressing was allowed to remain undisturbed for a considerable period, sometimes as long as three or four weeks. On removal, when the accumulated discharges were washed away, it was found that healing had proceeded to a remarkable degree. A new casing was then applied in a similar fashion. The advantages of the method were many. The frequent painful dressings were eliminated; there was no danger of an added implantation infection; the complete rest was appreciated by the patient and secured more rapid healing. In fact, the success of the method depended in large degree upon the immobilisation of the diseased tissues which allowed the healing process to go on undisturbed. In addition, also, it was quite possible that the presence of discharge inhibited bacterial growths and perhaps led to local fixed tissue-cell immunity. The sole disadvantage of the method was the disagreeable smell which accompanied it. This could be partly masked by the use of a few drops of some volatile oil, and in any case most patients preferred to get well quickly, and to this end were willing to put up with minor inconveniences. Orr's method was likewise applicable to septic compound fractures, and, indeed, almost any septic wound. Prof. Pannett concluded by reference to the part played by physiological methods in some other septic infections.

Some Common Minor Digestive Disorders.

Dr. T. C. HUNT, at the same course, spoke of some common digestive disturbances which tended to be rather neglected in text-books. The typical *bilious attack* or sick headache was usually an attack of migraine. One reason why migraine was not more frequently diagnosed was that the attack was often not of the classical pattern. The headache was commonly bilateral. Definite ocular symptoms might be slight, and in fact the typical "fortification figures" were only quite rarely seen. There was, moreover, a type of migraine—sometimes spoken of as *abdominal migraine*—in which headache was entirely absent. This type of attack, generally recognised as a "chill on the liver," might also be associated with gall-stones or cholecystitis and somewhat similar attacks might be produced by other causes. There should be little difficulty in distinguishing such conditions as acute appendicitis, but besides migraine and cholecystitis, two common conditions should be considered. The first was that of so-called gastric or abdominal influenza, the second that of acute food poisoning.

Gastric influenza was one of those intangible conditions whose very existence was denied by many. Dr. Hunt felt sure that such a condition did in fact exist, and in its diagnosis he stressed the following points: (1) It was primarily a general disease and only secondly an abdominal one—that is to say, the first symptoms were general: headache, malaise, muscular pains, after which digestive symptoms began; (2) it was rarely or never purely abdominal, and was almost always associated with throat or respiratory symptoms of some degree. There was moderate pyrexia, general aching and discomfort in the epigastrium, slight vomiting, marked anorexia, and great depression. Severe pain due to spasm of the colon might closely simulate acute appendicitis; in "abdominal influenza," however, there was no true rigidity, and little real deep tenderness. A blood count was of the greatest value since a leucopenia was typical of influenza, whilst appendicitis was associated with a leucocytosis. In treatment the combination of rhubarb and soda was, in Dr. Hunt's experience, the most efficacious of all dyspeptic mixtures, and aspirin as a rule was also useful and quite well borne.

Acute food poisoning, on the other hand, most usually began as a purely abdominal condition, after which general symptoms supervene. It was almost always associated with diarrhœa and more vomiting; the patient was more collapsed and the pain more severe and colicky. The whole colon might be very tender but any rigidity over it was generally fairly easily overcome by gentle coaxing.

In the differential diagnosis between abdominal migraine and gall-stones and cholecystitis there might be considerable difficulty. In all cases it was essential to consider whether the primary factor might not be a migrainous, constitutional, or hepatic one rather than a purely local one of the gall-bladder itself. It was, perhaps, no less important to diagnose between attacks of "abdominal migraine" and gall-bladder disease, than to decide if possible which of the two might be the primary condition. In *true cholecystitis* there were certain distinguishing features, notably a more or less localised tenderness over the gall-bladder area at the eighth and ninth right costal cartilages; pain was often worse on deep inspiration, and on percussion posteriorly the diaphragm might be found to move less than normally. Sometimes there

was definite pain on pressure over the right phrenic nerve between the heads of the sterno-mastoid, which pain might travel to the abdomen and the right shoulder. The cyclical nature of the attacks was not necessarily against organic gall-bladder disease; the patients were, however, less well after the attacks than are migraine subjects, and were liable to flatulence and mild dyspepsia in their free intervals. A cholecystogram was often of great assistance and biliary drainage may also be of value. In the diagnosis, however, a careful history was of vital importance. In spite of all care there would still be many cases in which the attacks appeared to be hepatic in origin, and in which evidence of gall-bladder disease was inconclusive, others in which the attacks could not be attributed solely to the presence of gall-stones, and some in whom they had persisted unchanged after removal of the gall-bladder. Evidence had accumulated of an association of hepatitis with gall-bladder disease, and Dr. Hunt urged that consideration should be given to the initial cause of liver dysfunction. This he believed might be in some cases migrainous or constitutional, in some bacterial.

In the *treatment* of the underlying hepatic dysfunction in the type of case described, four lines of treatment had been found to give good results: (1) When an "aura" of especial drowsiness occurred a day or two before the attacks began, large amounts of acetone bodies were often found in the urine together with urobilin; glucose should be given in full doses of 1 to 2 ounces three times a day during this period. (2) Dr. Hunt had used with great success decholin, a powerful cholagogue which had had a wide use abroad. This was similar to felamine and was a pure preparation of dehydrocholic acid. Dr. Hunt used it by mouth (two tablets three times a day). It was a powerful stimulant to biliary excretion, and probably also to the liver cells themselves. In addition to this such bile-salt preparations directly aid in the absorption of fats and also in the stimulation of the pancreatic secretion by virtue of their adsorbing action upon secretin. Patients should be warned that decholin might cause some abdominal discomfort at first. (3) Drainage of the bile by duodenal catheterisation was sometimes successful though it might have to be repeated. (4) Diet was, of course, a factor, quantity being of far more importance than quality; in some patients the fat tolerance is quite good, but few were able to take really large meals without some discomfort. Ices and cold drinks seemed to be specially bad in cases of cholecystitis, and eggs were apt to cause so much distress that their administration had even been suggested as a diagnostic measure. In migraine without gall-bladder disease no one article of diet was especially prone to provoke attacks, and the best advice was just that of moderation.

In summing up, Dr. Hunt said he had described a type of bilious attack which could be called abdominal migraine and might occur as a true constitutional disorder or in association with gall-bladder disease. Differentiation might be difficult, and even if the gall-bladder was diseased its removal might not relieve the attacks. The underlying cause in both cases was often a metabolic liver disturbance, and could often be treated successfully by the administration of glucose, bile-acids (e.g., in the form of decholin), moderation in diet, and sometimes by duodenal drainage of the bile. He discussed also functional dyspepsia in young people and dyspepsia in old people associated with (*a*) enlarged prostate (*b*) arterio-sclerosis.

MEDICINE AND THE LAW.

Artificial Cream Act Prosecution.

ON a prosecution by the Wiltshire County Council the firm of J. Lyons and Co., Ltd., was convicted at Swindon on Sept. 25th in a test case under the Artificial Cream Act, 1929, for selling "cream sandwiches" not containing cream as now defined by statute. Mr. Dyer, the Wiltshire county analyst, gave evidence that the contents of one sample were sugar and emulsionised fat, though he did not suggest that this article of food was not perfectly wholesome.

It may be remembered that, soon after the Food and Drugs Acts had been restated in an orderly form by the Food and Drugs (Adulteration) Act of 1928, a new patch was put on the fabric by the Artificial Cream Act at the instance of agricultural interests. The latter statute made it an offence to sell or offer for sale for human consumption under a designation including the word "cream" any substance purporting to be cream or artificial cream as defined in the statute except in two permitted cases. The first of these two cases is where the substance really is "cream" within the statutory definition—i.e., "that portion of natural milk rich in milk fat which has been separated by skimming or otherwise." The second case is where the substance is artificial cream as defined in the statute, and where the word "cream" is immediately preceded by the word "artificial." The statutory definition of "artificial cream" is "an article of food resembling cream and containing no ingredient which is not derived from milk except water or any ingredient or material which by virtue of the proviso to Subsection (2) of Section 2 of the Food and Drugs (Adulteration) Act, 1928"—i.e., the proviso which permits the addition of ingredients or material not injurious to health if added because required for the production or preparation of the article of food as an article of commerce in a state fit for carriage or consumption, and not fraudulently to increase bulk or weight or to conceal inferior quality—"may lawfully be contained in an article sold as cream."

The defendant firm urged strongly that the Artificial Cream Act was never intended to apply to the use of cream in confectionery articles, and that "cream" in the confectionery trade did not mean dairy cream, which was unsuitable because it would not keep wholesome in the ordinary circumstances of the trade. After witnesses from England, Scotland, and Ireland had given evidence in support of the defendants' view, the Bench, having to interpret the actual words used by Parliament rather than the supposed intention of the legislature, imposed a fine of £2 and costs on each of two summonses. More light will no doubt be thrown on the legal position on appeal. As was mentioned in THE LANCET a year ago (1929, p. 1271), there has been departmental support for the view that the Artificial Cream Act does not apply to fancy cakes or confectionery containing cream. Naturally the defendant firm, which claimed that this was the first complaint in 50 years, resented the suggestion of fraud. In view, however, of the language of the 1929 Act, it may be that the confectionery trade, driven by the restriction of preservatives to the use of "re-constituted" cream, must invent a new designation for what is at present called a cream sandwich.

Withholding Information.

The medical practitioner who gives evidence in workmen's compensation cases is regarded almost

as an officer of the court. The tribunal expects him to lay all the cards on the table, and is suspicious if there seems to have been any want of frankness. At the Westminster County Court last week a labourer employed by the Anglo-American Oil Company was applying for an award under the Workmen's Compensation Act. He had had his leg broken in August, 1929, by an accident while carrying a drum of motor-spirit. He was paid full compensation until May 27th, and he now claimed for continued partial disability. His panel doctor gave evidence that the workman had developed flat-foot in his left foot; he believed that it would get worse. He had seen the patient on May 6th in consultation with the respondent company's doctor, but had not pointed out the flat-foot to the latter. The county court judge, as well as counsel for the respondent company, accused the applicant's doctor of "hiding the ace of trumps up his sleeve"; apparently the suggestion was that the doctor had attempted to obtain some advantage for his panel patient by concealing the patient's disability at the moment when it could properly have been investigated by the medical adviser on the other side. The sensible proposal was made that the workman should now be seen by both doctors and a medical referee. The result of this joint examination, as announced in court by the judge, was that the workman's doctor agreed that, though there was a slight dropping of the arch of the left foot, there was no flat-footedness amounting to a pathological condition. The distinction may be somewhat subtle; it represented perhaps a compromise; it meant doubtless that, though the feet were not symmetrical, the difference between the left and right foot did not exceed the normal variation. The learned judge dismissed the application with costs. "The medical man in this case," he observed, "never said a word about this flat-footedness, of which he knew in May, till three days ago; there is no flat-footedness; he has been advising his patient to keep from work because of something which was non-existent."

Hard words break no bones; even allegations of card-sharping, applied figuratively, may sometimes be discounted in a forensic atmosphere. Fortunately, so far as the report of the proceedings indicates, the suggestion of fraud or dishonesty was negatived. The gravamen of the criticism was that the medical practitioner had acted as a partisan, and that his cleverness had been misguided. This merely illustrates the plain truth that, when a professional man gives evidence in a court of law, the more impartial and frank he shows himself, the more impressive will his testimony be.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PROGRESS OF PUBLIC HEALTH IN THE IRISH FREE STATE.

IN the current number of the *Journal of State Medicine* is an article by Dr. Edward F. Stephenson, chief medical officer to the Department of Local Government and Public Health of the Irish Free State, which records with legitimate pride the progress made in public health administration in recent years. Dr. Stephenson claims that advance has been more rapid than in most other countries, yet the health schemes are laid on solid foundations, and are capable of expansion on definite lines. All the essential health services, including the medical inspection of school-children, are assembled under the control of the Minister for Local Government and Public Health, and complete coördination is in process of establishment in local administration. At the time of the passing of the Public Health Act in 1925, outside the county borough of Dublin there was no whole-time medical officer of health in the Irish Free State. It required an active educational campaign throughout the country and persistent pressure by the department to persuade the local authorities of the necessity of appointing medical officers of health. At the present moment there are 15 whole-time county medical officers of health, together with whole-time assistants as well as principals in the larger cities. It had to be remembered also, in making these appointments, that there were not a great many candidates available who would be likely to make efficient officers, and too great hurry might have resulted in the appointment of a proportion of comparatively incompetent men. The department recognised that the success of the new system of public health administration would depend largely on the proficiency and energy of the persons appointed as county medical officers of health. Dr. Stephenson draws attention to the establishment of diphtheria immunisation centres at Dublin and Cork, and to the activity of the medical inspection of school-children throughout the country. He mentions also that the veterinary staffs in Dublin, Cork, and Limerick have been strengthened, and that the supervision of meat-supplies is much more thorough than formerly. Naturally he does not tell us that much of the progress which he records is due to his own efforts, but everyone in Ireland who is interested in health knows well that the determination and courage of the Government's chief medical officer have been among the most potent factors in recent progress in health administration.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENT.)

COSTS OF MEDICAL CARE.

THE Committee on the Cost of Medical Care has changed its name to the Committee on the Costs of Medical Care in order to emphasise that it is not the doctor's bill alone which is responsible for the expense of sickness. Their latest publication is a Survey of the Medical Facilities of Shelby County, Indianna. It shows that the people of this county spent over half a million dollars in 1929 for the care and prevention of sickness, or about $21 per capita. Approximately, one-third of this sum was received by physicians, one-third was spent on drugs and medicines, and one-third went to dentists, nurses, hospitals, and other agencies. The other agencies include one osteopath, five chiropractors, six Christian Science practitioners, an optometrist, and a chiropodist. These irregular practitioners collected $40,648, as compared with $153,915 paid to 31 regular physicians. It is interesting to note that, while $27,161 was spent on drugs prescribed by physicians, $160,000 was spent on drugs not so prescribed.

FIRST-AID BY THE ROADSIDE.

The American Red Cross is organising a roadside service of first-aid in an attempt to meet the rising tide of automobile accidents. Wayside shops, community centres, suburban stations of State police will be equipped with first-aid outfits at points where accidents have been frequent in the past, and at the junctions of main arterial routes. A telephone directory of physicians, hospitals, and ambulances in the immediate vicinity will be available at each station. Volunteer automobile transportation will

be organised when necessary. Road signs will be put up indicating the direction of and the distance to the nearest first-aid station.

INSPECTION OF THE BODY.

A recent decision of the New York State Court of Appeals is of unusual interest. The defendant in a personal injury case sought to have a blood test made of the plaintiff's blood. The lower court had held that the State law entitling the defendant to a physical examination of the plaintiff was not broad enough to include an examination of the plaintiff's blood. The appeals court pointed out that in the State of New York the English common law forbidding inspection of the body of a party in a personal injury action has been deliberately changed in the interest of the defendant in such cases. The purpose of the State law, so says the court of appeals, is "to afford protection to defendants, to enable them to discover the truth in regard to injuries claimed to have been received by plaintiffs, and thereby to promote justice."

EPIDEMIC MENINGITIS.

The Department of Public Health of the State of Massachusetts has inaugurated a diagnostic service for the detection of epidemic meningitis, a service which is put freely at the disposition of the physicians of the State. In the three months during which this offer has been extended, 20 patients have been referred. Of these, nine were found to be suffering with meningococcus meningitis and the remainder to have types of meningitis, encephalitis, cerebral apoplexy, or other conditions. All the patients had signs of meningeal irritation and diagnosis was made by laboratory examination of the spinal fluid. The success of this service in its preliminary trial has decided the health commissioner to continue it on a permanent basis. A similar but distinct service for the diagnosis of poliomyelitis has been functioning already for some time.

MEDICAL STUDENT LOANS.

Many students in this country embark on a medical curriculum with only the most slender resources. They serve in the vacations as waiters or chauffeurs or in other ways and even work in the evenings or at meal-times during term time. In this way many very successful doctors have won their diplomas and much valuable experience in the school of life; but not, of course, without some sacrifice of academic efficiency. An editorial in the *Nebraska State Medical Journal* proposes that the medical society interest itself in the organisation of a student loan fund, to be used to help senior medical students and internes. "Several agencies," we are told, "assist worthy, needy students in the Omaha medical schools, notably the Nebraska Federation of Women's Clubs. The need, however, exceeds the resources of the funds provided."

PANEL AND CONTRACT PRACTICE

The Insurance Acts Committee.

THIS Committee includes the majority of members selected by the local medical and panel committees of the country, and deals with all matters arising under the National Health Insurance Acts. It has received recognition from the Ministry of Health. In view of the B.M.A. scheme for the foundation of a general medical service, under which, among other things, the scope of the Insurance Acts would be extended and "home hospitals" instituted, the Report of this committee is of interest to the whole medical profession; 14,000 panel practitioners are definitely concerned, and what affects such a fraction of the profession is necessarily vital to the interests of us all. The last Report of the Committee deals in detail, among other things, with certification and prescribing, while it includes the opinion which the Committee has formed as to the actual time at which the insured person is entitled to obtain medical benefit, a question that often seems puzzling to the public.

CERTIFICATION.

At the Annual Conference in October last (THE LANCET, 1929, ii., 942) it was decided that statistics collected by the Ministry of Health as to the issue of certificates by insurance practitioners in each area should be circulated to panel committees. The representatives of the Insurance Acts Committee pointed out that, although they asked for that information to be circulated, it did not necessarily follow that any hard-and-fast deductions should be or could be based upon the result. The representatives thought that the issue of the data would bring home to the practitioner the number of books he was using as compared with the number used by a colleague with a similar practice. In the end it was agreed that the data should be issued by Insurance Committees direct, and only to the medical practitioners concerned, as circulation to the panel committees might lead to prejudice.

Certification in respect of pregnancy is a subject of some difficulty which is dealt with in the Report.

The Conference asked the Committee to consider the suggestion that when a medical practitioner has satisfied himself that an insured person is so far advanced in pregnancy that on that account she will not be able to work again until after her confinement, it shall be lawful for him to give a certificate to that effect, stating that the woman is unable to follow her employment, and that such certificate shall be sufficient warrant for the payment of sickness benefit until the termination of the pregnancy. The Committee, however, is not in favour of the suggestion, being in agreement with the views expressed in the B.M.A. scheme for a National Maternity Service stressing the importance of medical supervision during the antenatal period, especially during the later weeks of pregnancy. The Committee is also unable to support the suggestion that, as it is now customary for Approved Societies to pay sickness benefit on account of advanced pregnancy, a special certificate might be introduced for this purpose. The present forms, says the Report, are quite suitable for use in this case, which is opposed to the introduction of any more special certificates.

Change of doctor.—The Committee was invited by the Minister of Health to coöperate in reviewing the present arrangements which provide that an insured person may change his doctor at any time subject to a fortnight's notice, or immediately when both insurance doctors are agreeable. This matter was debated in the House of Commons in April last, when the considerable increase in sickness benefit claims experienced by societies in 1929 was under consideration. The question of excessive claims will now be investigated, says the Report, by Regional Medical Officers, but the Ministry is not prepared to assess the exact relation between changes of insurance doctors and improper claims upon insurance funds. The view of the Ministry of Health is that changes

of doctor should take place at quarterly intervals only, and that insured persons should be required to give at least a month's notice to the Insurance Committee of their desire to change. With regard to the provision, with certain modifications, existing between 1913 and 1927 that a change of doctor could only be affected at certain dates, the Committee holds the opinion, expressed by resolution in 1927, that a return to this arrangement was inadvisable. While recognising that the arrangement prevailing since 1927, under which a fortnight's notice may be given at any time before a change can be effected in the usual course, has definite advantages, the Report deprecates an extension of the principle. It is stated that the view is erroneous that laxity in certification attracts panel patients.

PRESCRIBING.

While the Conference approved the proposal of the Ministry to circulate to insurance practitioners comparable average figures as to the prescribing of practitioners in the area as a whole, the Committee has arranged that these figures should be regarded as confidential—though passing through the Insurance Committee's office the figures will not be disclosed except to the panel committee and the doctors concerned.

At the same time, the Committee urged the necessity for some improvement of the present position of practitioners in the matter of the payment for drugs necessarily or ordinarily administered by a practitioner, or drugs needed for immediate administration or application. It was pointed out that if the more specially expensive drugs are not included in the list appended to the Distribution Scheme, practitioners are put to considerable expense in this connexion, as the trend of modern treatment involves more and more use of the injection method of administering drugs. A small joint committee of representatives of the Ministry, the Committee, and pharmacists will meet quarterly, or at least half-yearly, for the purpose of considering additions to the list in question. It is anticipated that liver extract, when used in cases of pernicious anæmia, will be added to the list in question in the near future, and the position of other preparations is under consideration.

Preparations not ordinarily regarded as medicines.—The draft articles dealing with these substances, now issued by the Ministry of Health, are included in the Report, which points out that there is nothing mandatory in the list of substances considered to be "never drugs," "always drugs," or "sometimes drugs." But the lists are held to have a certain status until official decisions can be built up. Once an official decision has been arrived at that an article is "never a drug," the Insurance Committee will be able to recover its cost from the prescribing practitioner, while where an article, held to be "sometimes a drug," is found not to be a drug in a particular case, the Regional Medical Officer will bring the matter to the notice of the practitioner.

THE TITLE TO BENEFIT.

The following expression of opinion is contained in the Report as to the actual time at which an insured person is entitled to obtain medical benefit:—

A person becomes entitled to Medical Benefit as an insured person upon undertaking insurable employment and the payment of the first contribution by his employer. In order to secure the other benefits under the Act an insured person must become established as a member of an Approved Society or as a Deposit Contributor, and the lists of persons entitled to Medical Benefit are normally built up by the notification to the respective Insurance Committees by the Approved Societies of the names of insured persons as they become established as their members. Similar notification is made by the Department in respect of Deposit Contributors. By this process the bulk of insured persons become possessed of medical cards issued by Insurance Committees, for presentation to insurance practitioners, upon satisfactory evidence of insurability furnished by the Societies and the Department respectively. Pending establishment as a member of an Approved Society or as a Deposit Contributor an insured person is entitled to a medical card to enable him to obtain Medical Benefit, and the responsibility for the issue of a medical card rests with the Insurance Committee upon submission of evidence of insurance—e.g., contribution card or statement by employer. The medical card issued in these circumstances is available for three months only, before the end of which period the insured person has normally become established as a member of an Approved Society or as a Deposit Contributor.

MISCELLANEOUS.

Among miscellaneous matters dealt with in the Report several are of general importance.

Medical records.—The Committee has issued a circular asking Panel Committees to bring to the notice of constituents the necessity of keeping accurate records, and with respect to the production of such records before Medical Service Subcommittees the approval of the Ministry of Health has been obtained to an arrangement by which the consent of the insured person must first be obtained. The Committee holds that there must be no exception here where the practitioner is defending himself against a charge.

Insurance practitioners and access to voluntary hospitals.—A questionaire was issued last year to 813 voluntary hospitals, and replies were received from 648:—

Groups.	Questionaires issued.	Replies received.	Per cent.
London General Teaching Hospitals	12	8	66·6
London General Hospitals—			
with 100 or more beds	21	21	100·0
with less than 100 beds	27	19	70·37
London Special Hospitals	71	54	76·05
Provincial General Teaching Hospitals	16	16	100·0
Provincial General Hospitals—			
with 100 or more beds	105	90	85·7
with less than 100 beds	451	353	78·27
Provincial Special Hospitals ..	110	87	79·09
—	813	648	79·7

It was considered a fair assumption that a general view had been obtained. The Hospitals Committee of the B.M.A. having received the various replies, categorised as coming from hospitals with "restricted" or "unrestricted staff," and details as to the provision of private wards, expressed the opinion that increased opportunities of access by private practitioners to hospitals for the treatment of their own patients was desirable, with the result that the following was added to the revised Hospital Policy submitted to and approved by the Annual Representative Meeting of the Association in July:—

"In order that further opportunities may be afforded to private practitioners to treat their own patients in hospital the unrestricted staffing of general hospitals of less than 100 beds should be extended."

The Insurance Acts Committee, while of opinion that it is not for it to take any specific action in this matter at present, has noted the practice of many voluntary hospitals throughout the country in affording facilities to practitioners not on a selected staff to have access to their patients in hospitals. With the circulation and discussion of the Association's Hospital Policy and its proposals for a General Medical Service the question of greater facilities of the kind desired by the Conference is likely to obtain much more publicity. Whether the hospital authorities will favour this extension is a matter which depends greatly on how far practitioners in each area seize and use opportunities for impressing the Association's policy on the local voluntary hospitals, and the county and county borough councils.

The Report, full of considered and important matter, is timely on the eve of the Annual Conference.

Prospects of National Insurance Development.

On Oct. 2nd the Minister of Health received a deputation from the National Association of Trade Union Approved Societies, which brought before him some resolutions on social insurance passed at the annual meeting of the Association held last June. While welcoming the appointment of a Cabinet Committee to survey the existing insurance schemes, the Association urged on the Government that legislation should be introduced as early as possible for the development of the National Health Insurance Scheme by the provision of such additional services as had been recommended by the Royal Commission. The deputation intimated that the Association contemplated the preparation of a memorandum for submission to the Cabinet Committee on the desirability of coördinating the present national insurance schemes. In reply, the Minister said the Government had felt the importance of obtaining a picture of the national insurance schemes as a whole and with this object had set up the Cabinet Committee. The task before the Committee was immense, and it was useless to suppose that a complete scheme could be framed in a short time or carried into effect in one stage. In the meantime he would like to consider improvements of the Health Insurance Scheme, and the possibility of an improved maternity service especially attracted him. But there were obvious financial difficulties as well as the difficulty of finding Parliamentary time.

Proposed Extension of Service in Scotland.

The resolution of the Edinburgh Burgh Insurance Committee that the time was opportune for the extension of domiciliary medical service (mentioned in this column last week) came before the conference of Scottish Insurance Committees, but did not please the meeting, which remitted it to its executive for consideration and report. Sir Henry Keith remarked that the motion contained many points for argument and controversy.

Highlands and Islands Board.

At the same meeting Dr. Alex. Shearer, attached to the Department of Health for Scotland, told the story of the medical and nursing services in the Highlands and Islands of Scotland which enabled the poorer classes to get prompt and adequate medical attention, and, to some extent, the services of nurses when needed. The justification of such a service lay, he said, not so much in the improved status, emoluments, and housing of doctors and nurses, however good and desirable these things might be in themselves, but in the extent to which medical and nursing services in adequate volume and of a high standard had been made available to people at a cost within their means. The treatment of women and children in the Highlands had, he said, been transformed by the fund. The service was not only a ready help at home, but a source of inspiration abroad, for in Kentucky, Newfoundland, and South Africa, ideas worked out and tested in the Highlands were being adopted.

Non-resident Panel Doctors.

At the last meeting of the Bournemouth Insurance Committee the application of a local doctor for inclusion in the medical list was challenged by a member of the committee on the ground that he did not intend to live at his surgery. There was consequently, he said, a danger of patients being unable to get in touch with him readily in an emergency. The chairman, Mr. A. T. Borthwick, J.P., overruled the objection, saying that, provided the practitioner made satisfactory arrangements for rapid communication, no exception could be taken, and there were already, in fact, several doctors in the town who were not living at their surgeries. Permission was granted on the understanding that suitable arrangements were made.

"Nearing a Climax."

At the annual conference of the Scottish Association of Insurance Committees, held at Inverness, the President, Mr. A. A. Dick, of Lanark County, said that the intensity with which the question of extending medical service under the insurance system was being discussed suggested that we were nearing a climax. It might be assumed, he said, that this service would include in its scope, and possibly have as its most prominent feature, the bringing of dependents under the National Health Insurance Act—a change long overdue. The Government was accredited with a more comprehensive scheme under which private practice might be reduced to a vanishing point. At the same time the British Medical Association had drafted a scheme for a general medical service. The real question which emerged was, he said, whether the people of this country should be medically treated by whole-time medical officers appointed by local authorities or the State, or, alternatively, whether the present scheme of medical service under the Insurance Acts should be widened so as to bring all within its purview, thus retaining the right of free choice which was the essential feature of the scheme. Personally, he said, he subscribed to the principle that the family doctor was the foundation of any complete and efficient medical service, and that there was no line of demarcation between preventive and curative branches of medicine. Every general practitioner, in fact, should be associated with all the health services. The passing of the old parish councils had raised acutely the question how to provide medical service for those too poor to pay for it. His own feeling was that, without waiting for the larger extension, local authorities, through their public assistance committees, should confer with local insurance committees in devising some method of contract under the insurance system. This, if it could be arranged, would do away with the present segregation of the poor, and reserve for them the valued right of free choice of doctor.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Courses are in progress on Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose, and Ear Hospital, continuing until Oct. 31st, and on Tropical Diseases at the Hospital for Tropical Diseases until Oct. 24th. From Oct. 13th to 24th the Chelsea Hospital staff will undertake a special course in Gynæcology occupying mornings and or afternoons. From Oct. 27th to Nov. 8th a special course on Orthopædics will be given at the Royal National Orthopædic Hospital and at Brockley Hill Country Hospital. (The minimum entry is ten.) The Fellowship has arranged a series of lectures on Recent Advances in Medicine and Surgery, and Dr. G. E. Beaumont will give the opening lecture at the rooms of the Medical Society of London at 4 P.M. on Monday, Oct. 13th, on Recent Advances in the Medical Treatment of some Pulmonary Emergencies. On Oct. 13th, at 3.30 P.M., the first clinical demonstration of the winter session will be given at the Miller Hospital, Greenwich, by Dr. Harold Pritchard. On Oct. 14th, at 2 P.M., Mr. C. P. G. Wakeley will give a clinical demonstration in the out-patient department at King's College Hospital. The lecture and demonstrations are open to the medical profession without fee. Particulars of all courses may be obtained from the Fellowship at 1, Wimpole-street, London, W. 1.

CORRESPONDENCE

RECRUITMENT FOR NURSING.

To the Editor of THE LANCET.

SIR,—The medical profession seems curiously asleep in the face of an approaching crisis. More and more the doctor depends on the nurse; less and less will he find her. Nursing is going. The "big hospitals" still find recruits, a few may even have a waiting list; the lesser ones, cottage hospitals, sanatoriums, sidelines of all sorts, and the smaller poor-law infirmaries advertise in vain. They can attract neither probationers nor trained people for their senior posts. They run on two expedients: (1) the elevation of the ward maid, (2) the employment of the "temporary nurse." This variety represents those who have fallen by the way after a few months in hospital; they are employed by an agency which pays them about £60 a year, and charges £2 2*s*. a week for their services. They are in constant demand, so the agencies flourish and multiply while the hospitals groan under the expense and the lack of efficiency. What, then, becomes of all the nurses who pass out of the training schools year by year? They disappear down four main avenues: (1) public health work (with free evenings and week-ends); (2) work abroad (with variety, better social status, better pay); (3) private work (better pay); (4) administrative posts in hospital (better professional status).

None appear to desire a continuance of ordinary nurses' work in small or special hospitals in this country. Meanwhile, appeals are made to girls leaving school at 17 or 18. Eminent doctors and other notables give eloquent addresses on the human values of a nurse's life. Parents and guardians listen and remain cold. They think of the long hours, the short holidays, the restricted freedom, and the wear and tear of a nurse's life. They prefer to continue the educational struggle a year or two longer and offer their girl the wider choice of teaching, social work, or business. And yet the "notables" were right; nursing *is* a great work and can make use of the best that any human being has to offer. Why, then, are we letting it slip as an opportunity for our well-educated girls? Can no general coöperative effort be made to bring its conditions into line with those of other fields of employment, to modernise the service, and make it attractive?

Will not the public say to our profession, as it did to the civic fathers of Hamlin city:

> "Wake up sirs, give your brains a racking,
> To find the remedy you're lacking"?

I am, Sir, yours faithfully,

ESTHER CARLING,
Medical Superintendent, Berks. and Bucks. Joint Sanatorium.

Peppard Common, Oxon, Oct. 7th, 1930.

ORAL HYGIENE.

To the Editor of THE LANCET.

SIR,—It was unanimously decided by the Hygiene Commission of the Federation Dentaire Internationale, during the recent session held at Brussels, that an International Oral Hygiene Exhibition should form part of the Eighth International Dental Congress at Paris from August 3rd to 8th, 1931. The organising of this exhibition was delegated to a committee comprising representatives chosen from all countries affiliated to the F.D.I. In this way its international character is assured.

As it is most desirable that Great Britain should be adequately represented we should be glad if those who are in a position to assist with suitable exhibits relating to all branches of oral hygiene, including the teeth of children of all ages as well as those of adults, and the care of the expectant mother, would forward to either of the undersigned full particulars of any exhibits which they may be prepared to loan. This should be done as soon as possible, because the organisers of the Hygiene Exhibition will require to know before the beginning of December the exact space to allot to each country.

It is particularly requested that our colleagues will assist in making the British section of the exhibition eminently successful.

We are, Sir, yours faithfully,

ALFRED ROWLETT,
165, London-road, Leicester.
J. MENZIES CAMPBELL,
14, Buckingham-terrace, Glasgow, W.2,
Joint organisers for the British section of the Oral Hygiene Exhibition, Eighth International Dental Congress.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

C. D. Delacour de Labilliere to be Surg. Lt.

The following appointment is notified: Surg. Lt. J. G. Currie transferred to Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. A. L. Gunn transferred to List 2, London Divn.

Surg. Sub-Lt. W. H. C. Watson to *Champion*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt. Col. E. Ryan, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. (temp. Lt.-Col.) B. Johnson to be Lt.-Col., vice Lt.-Col. and Bt. Col. E. Ryan.

Maj. W. F. M. Loughnan to be temp. Lt.-Col.

Capt. W. R. D. Hamilton to be Maj.

ARMY DENTAL CORPS.

Maj. T. K. Place, half-pay list, is restd. to the estabt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. E. M. Pennefather resigns his commn.

TERRITORIAL ARMY.

Lt. R. Coyte to be Capt.

ROYAL AIR FORCE.

Flight Lt. (Hon. Squadron Leader) E. A. Wheeler (Temporary Maj., Army Dental Corps) is transferred from the Army to the R.A.F.

The undermentioned Flight Lieutenants, R.A.F., Temporary Captains, General List, Army, Dental Surgeons, are transferred from the Army to the R.A.F.: C. F. Pitt, A. R. H. Bennett, and A. P. McClare.

The undermentioned Flying Officers, R.A.F., Temporary Lieutenants, General List, Army, Dental Surgeons, are transferred from the Army to the R.A.F.: B. L. Harrington, A. P. Atkins, M. J. Pigott, and C. M. Leckie.

Flying Officer B. L. Harrington is granted a non-permanent commission as a Flying Officer.

COLONIAL MEDICAL SERVICES.

The following new appointments have been made: Dr. L. C. Mayne and Dr. R. N. Wilcox, Medical Officers, Nyasaland; Dr. J. H. Thompson, Senior Medical Officer, Palestine; Dr. M. Edwards and Dr. E. W. Martindell, Medical Officers, Straits Settlements; Dr. E. M. Weir, Lady Medical Officer, Straits Settlements; Dr. H. G. Floyd, Dr. A. J. Garde, and Dr. W. A. Wilson, Medical Officers, Uganda.

Dr. E. A. Cormack, Medical Officer, West African Medical Staff.

PUBLIC HEALTH SERVICES

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attend-ance.	Routine inspec-tion.	Special exams. and reinspec-tions.	Percentage of defects.
City of Carlisle..	8,462	7,384	3,035	7,147	22·7
County of Cambridge	—	—	3,173	6,828	8·3

City of Carlisle.

Dr. Joseph Beard mentions that this will be his twenty-second (and last) annual report. There must be an interesting vista of changes and development that he could describe. Even in the last few years the improvements have been noteworthy; in the years 1926 to 1930, for instance, the loss of attendance through scabies has fallen from 181 school days to 159, then 117, and now 55. It is not a great matter but it is highly significant. Then there are all the workers in the new orthopædic scheme, including Miss Walker, C.S.M.M.G., who is employed as a whole-time orthopædic nurse and is responsible for the massage, splinting, plaster work, and certain remedial exercises. She attends at the clinics, helps in the light treatment, undertakes home visits, and is thus one of the most valuable of the additions to the staff appointed in recent years. Another development, and one which is not common elsewhere, is the system in Carlisle of testing the vision (as "specials") of children in the two years between the entrant and intermediate groups. Hitherto defective vision in children below 8 was seldom discovered unless it was obvious, since sight-testing is rarely feasible among entrants, and the new procedure may save a good deal of vision. Evidence of progress in the vital matter of enlisting the sympathy of the parents is shown in their attendances at medical inspections, averaging 36 per cent. But Dr. Beard is alive to the gaps that remain, for in connexion with dental work he says: "The large number of temporary teeth needing extraction is due to the fact that, owing to unsatisfactory feeding and neglect of cleanliness, by the time a child starts school its mouth is in a very unhealthy and septic condition. Children get no dental treatment before school age, and their parents appear to be ignorant of the fact that, unless temporary teeth are cared for, it is impossible to have properly formed and healthy permanent teeth." Many authorities, he adds, now provide dental treatment and supervision for the pre-school child, either by the education committee or as part of the child welfare and maternity work. There is no child from this area attending a school for epileptics; four such children are entirely out of school. The authority has no class for partially deaf or partially blind children, nor is there any special class for dull and backward or feeble-minded children. Dr. Beard might have said concisely, there is no special school of any kind in Carlisle and very few exceptional children are having any special education. Evidently his successor will have fields in which to carry on the work of progress and development.

County of Cambridge.

Dr. Frank Robinson suggests no explanation for the very low percentage of children found to require treatment; a few cases may have been eliminated by the close coördination of school and infant welfare work. Children below school age are visited systematically by the health visitor who will have to deal with them later in her capacity of school nurse. Those requiring treatment are referred for it, and when necessary sent to Addenbrooke's Hospital; early cases of squint are dealt with by the assistant medical officer. This early care of strabismus has undoubted value in preserving sight, and the scheme is now well developed with the help of a travelling ophthalmic clinic. Dr. Jessie Gellatly attributes most of the malnutrition she finds not to poverty but to heredity, and in many cases to mismanagement, where the mother is not of strong mental calibre. Others again, often the children of well-to-do parents, suffer from being permitted to do as they like. A small number are overworked at home, and benefit has resulted in a few aggravated instances from the ministrations of the N.S.P.C.C. Her interesting remarks suggest a grouping into (1) underfed children, usually from poverty; (2) wrongly fed children from parental inefficiency; (3) malnutrition connected not with diet but fatigue and defective home hygiene; and (4) constitutionally thin children who may have excellent homes. Each class needs its appropriate measures. For some, and especially the probably pre-tuberculous, malt and cod-liver oil are indicated, while for those who suffer from acidosis such things are worse than useless. Nearly all the groups are likely to benefit from the open-air school, and in this county selected cases are maintained in such schools. Dr. Robinson recalls some remarks in the last annual report of the Chief Medical Officer to the Board of Education: "Without the stimulating and sustaining influence of an organiser, physical training makes little or no progress. The areas in which competent organisers have been employed for some time are far in advance of the unorganised areas in every branch and aspect of work. In the one case there is progressive development and efficiency, in the other relative stagnation and inefficiency. . . . In most rural districts games as a regular and effective part of the children's physical education cannot be said to exist. . . . As physical culture becomes more fully recognised as an integral part of a liberal education, the less," he said, "shall we need formal and corrective work in physical training and the less shall we need medical treatment." The county is shortly to appoint its own organiser of physical training.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 27TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 82 (last week 61); scarlet fever, 1963; diphtheria, 1328; enteric fever, 63; pneumonia, 439; puerperal fever, 48; puerperal pyrexia, 101; cerebro-spinal fever, 7; acute poliomyelitis, 16; acute polio-encephalitis, 3; encephalitis lethargica, 10; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 30th–Oct. 1st was as follows:—Small-pox, 196 under treatment, 2 under observation (last week 200 and 2 respectively); scarlet fever, 1464; diphtheria, 1780; enteric fever, 23; measles, 92; whooping-cough, 125; puerperal fever, 20 (plus 6 babies); encephalitis lethargica, 119; "other diseases," 32. At St. Margaret's Hospital there were 15 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 5 (1) from measles, 5 (0) from scarlet fever, 11 (4) from whooping-cough, 36 (9) from diphtheria, 78 (21) from diarrhœa and enteritis under two years, and 20 (5) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Northampton and West Hartlepool. Three deaths from measles were reported from Liverpool, 3 from whooping-cough at Salford, and 2 at Leeds. Liverpool also reported 4 deaths from diphtheria, Birmingham 3, Nottingham and Leeds 2 each. The deaths from diarrhœa numbered 7 in Liverpool, 4 each in Derby and Salford, 3 each in Birmingham, Hull, and South Shields.,

The number of stillbirths notified during the week was 278 (corresponding to a rate of 43 per 1000 births), including 44 in London.

OBITUARY

ARTHUR LONGLEY WHITEHEAD, M.B. Lond., F.R.C.S. Eng.

WE regret to record the death of Mr. A. L. Whitehead, consulting surgeon to the General Infirmary at Leeds. The son of Alfred Whitehead, of Poole, he was educated at Leeds Grammar School, the Yorkshire College, the Leeds School of Medicine, Vienna, and Berlin. He qualified M.R.C.S. Eng. in 1892, took his M.B. Lond. in the same year, and the B.S. with honours in 1893. Immediately after qualifying he became house surgeon to Sir Arthur Mayo Robson at the Leeds General Infirmary, and then resident ophthalmic officer, and shortly afterwards was put on the staff as honorary ophthalmic and aural surgeon. He lectured in his specialty at the University of Leeds from 1912 to 1925, and during this period made various contributions to literature, being specially interested in medical ophthalmology. In his turn he became president of the ophthalmological section of the Royal Society of Medicine, and of the North of England Ophthalmological Society, and served as Vice-President of the Ophthalmological Society of the United Kingdom. During the war he was a major in the R.A.M.C. Territorial Force. Mr. Whitehead was elected a Fellow of the Royal College of Surgeons in 1924 as a distinguished member of 20 years' standing, and much appreciated this honour.

A colleague writes: "By the death of Mr. Whitehead the profession loses a distinguished ophthalmologist. His colleagues have to mourn for a greatly loved fellow-worker, and a large circle of private and of professional friends will be deprived of the companionship of one for whom they entertained the highest respect. Mr. Whitehead was essentially a Leeds man; he received his medical education at the Yorkshire College and the old School of Medicine, and it was during his studentship that the affiliation of the Yorkshire College with the Victoria University was carried out. After graduation he returned to Leeds, and in 1899 was appointed to the honorary staff of the General Infirmary and in the same year, owing to the occurrence of two vacancies in rapid succession, he became a member of the full staff. It was not until 1912 that the departments of ophthalmology and oto-rhino-laryngology were separated, so that until that time a large amount of aural work fell to Mr. Whitehead. When, however, the old department was split up, Mr. Whitehead, along with his senior colleague, Mr. Secker Walker, decided to devote himself to the development of the ophthalmic part of his work, and the work of these two men added greatly to the reputation of the Leeds School. Mr. Whitehead was a man of sound scientific training, of great diligence, of high ideals, and of great personal charm. He carried out his work in a quiet unobtrusive manner, and those who are most competent to form an opinion regarded him as an operator of unusual dexterity and skill. In the session of 1925–26 he acted as president of the Leeds and West Riding Medico-Chirurgical Society, and his tact and courtesy in the conduct of the meetings were noteworthy though he never allowed time to be wasted. When Mr. Whitehead was appointed a consulting surgeon to the General Infirmary he retained and exercised the right to the use of a certain number of beds. In this way he maintained his connexion with the institution, and his loss will be felt by all connected with it."

HUGH THOMAS ARCHIBALD WARNOCK, F.R.C.S. Irel.

Dr. Warnock, of Donegal, died last week in a nursing home in Belfast. He retired a few months ago from his public appointments as dispensary doctor and medical officer of the district hospital in Donegal after 50 years' service, but, in spite of failing health, he was until a few weeks ago still engaged in busy private and consulting practice. He was held in great respect and affection both as a man and as a doctor. "By the practitioners of his own and neighbouring counties," writes a colleague, "he was regarded almost as an elder brother, to whom they went for advice and help in all their difficulties, and he never failed them. The profession at large trusted him equally, and he was for many years an active member of the councils of the several medical organisations. From 1927 to 1929 he was President of the Irish Medical Association. Wise in counsel, kindly, gentle, and courteous to all, he was loved wherever he went, but probably only the poor of his own district knew the full measure of his generosity. He was a man whose life-work raised the reputation of the profession of which he was a member."

AMELIA GERTRUDE GROGAN, M.B., B.Ch. R.U.I.

Dr. Gertrude Grogan, who died on Sept. 20th, while on holiday in Bavaria, was born at her father's rectory in Co. Wicklow and was educated chiefly at home. Her early college days were passed at Alexandra College, Dublin, and after graduating B.A. she took the M.B., B.Ch. degree of the Royal University of Ireland in 1895. For several years she was assistant medical officer at Mullingar Asylum, and later at Fulbourne Asylum, Cambridge, and she then settled down in general practice in North London, doing part-time medical work at the General Post Office. Dr. Grogan was one of the pioneers in child welfare work, and gave to it many years of voluntary service. At the time of her death she was medical officer to infant welfare clinics in Brixton and St. Pancras, and to the St. Luke's Day Nursery, Holloway. She was an ardent supporter of the St. John Ambulance Association, was divisional surgeon for Finsbury, and for about 20 years had lectured at the Northampton Polytechnic Institute on first-aid, home nursing, and hygiene. She spared no trouble in preparing for these lectures, and was always on the alert to find new illustrations and anything which could add interest to them. Her interests were many and varied. She was a keen student of Esperanto, and had spent many holidays in attending congresses in its support.

A colleague writes: "Dr. Grogan was a most approachable person, with a great gift for setting people at their ease. Her Irish wit and ready invention improved every story that came her way, and she was never dull. All the mothers at the welfare loved her, for she was glad with them and sorry with them, but never impatient or hurried with them. Of her many talents one of her greatest was her talent for friendship. She had friends in all classes, and up to the time of her death still kept in touch with some of her patients in her early asylum work."

MEDICAL NEWS

HOSPITAL DINNERS.

St. Mary's Hospital.

There was a very large attendance of St. Mary's men of all ages at the Trocadero Restaurant on Oct. 3rd, when Dr. John Matthews, of the Therapeutic Inoculation Department, took the chair. The toast of "The Medical School" was proposed by Lieut.-Colonel H. E. Verey, chairman of the Board, who remarked with satisfaction that a contract for £200,000 had been signed, and that the rebuilding of the inoculation department would go on concurrently with that of the medical school. On the new island site accommodation would be provided for a nursing and domestic staff capable of dealing with 500 hospital beds. Dr. C. M. Wilson, who as dean of the medical school responded to the toast, said that the entry this year was exactly twice the entry in 1913, and the present policy was to reject candidates who were not well equipped for a medical career. When the school buildings and laboratories were completed in about 20 months space would be set free for enlargement of the hospital. It should then be practicable to ensure every capable student a resident appointment on qualifying. Mr. Warren Low, in proposing "The Chairman," spoke of his varied experience of life, and Dr. Matthews, in replying, gave reminiscences of his early life before the mast, and especially of four days when 1800 miles in the "roaring forties" were covered in a full-rigged ship. He expressed the regret of all St. Mary's men at the illness of Dr. Reginald Fuller, who was to have presided. Among the invited guests were the Vice-Chancellor of London University and the chairman of the Industrial Health Research Board.

Charing Cross Hospital.

The annual dinner for past and present students of Charing Cross Hospital was held at Gatti's Restaurant on Oct. 4th, with Mr. E. B. Waggett in the chair. In proposing the toast of the school and hospital, Mr. J. Bright Banister said that the recent election of one of the consultant obstetric professors, Dr. Watts Eden, to the presidency of the Royal Society of Medicine was a source of pride to the hospital. If the voluntary system was doomed, as some people thought, it lay in the hands of the medical profession to preserve the ideal of service for which the system stood. Students and staff must be ready, as they were at present, to subordinate their personal convenience to that ideal and to the welfare of the school. Mr. E. A. Crook, dean of the school, in a short and bracing speech, remarked that the number of entries of students had been doubled in the last 12 months. In proposing the health of the chairman, Mr. E. D. D. Davis spoke of the extension of the ear, nose, and throat department, which can now claim 18 beds and a separate operating theatre in the new wing. A programme of music, nicely balanced between the sentimental and the ribald, and including two songs of his own composition, was given by Dr. S. Taylor Harris.

Westminster Hospital.

A dinner celebrating the ninety-sixth anniversary of the foundation of this medical school was held at Grosvenor House on Oct. 1st. The chair was taken by Mr. S. Ernest Dore, who proposed the health of the school and the students, alluding wittily to the outstanding characteristics of each member of the staff. He announced that 31 students had joined the hospital this year, an increase of five on the previous year, and that Sir Henry Hadow, formerly Vice-Chancellor of Sheffield University, had become the chairman of the School of Medicine Committee. A special gift of £5000 has afforded excellent opportunities for development of the children's department of the hospital. Dr. H. Cecil Barlow, replying for the school, commented on the high proportion of old Westminster students on the staff, and described adventures in provincial practice. Mr. N. Heath replied for the students, and said that the school had at last achieved a real sports' union and had carried off the Junior Association Hospitals' Cup for the first time. The health of the visitors was proposed by Dr. Adolphe Abrahams, and responded to by the Rev. J. Scott Lidgett, Vice-Chancellor of the University of London. "The Chairman" was proposed by Mr. Arthur Evans.

St. Bartholomew's Hospital.

Bart.'s makes no ceremony of the opening of the winter session; the dinner on Oct. 1st is simply the occasion when old students revisit the hospital, observe for themselves what changes are taking place, and meet their old friends on the staff and in practice. Special significance was given to the gathering on this occasion by the presence of the Lord Mayor and the two sheriffs-elect, as well as the masters of six City companies, all of whom are deeply concerned in the development of the hospital within the City gates. Mr. L. B. Rawling made a genial chairman and his review of hospital life within his own memory was full of graphic touches. He joined the school by accident as he was on his way to cross the Thames, when he was intercepted and finally bound over by Dr. T. W. Shore, whose 50 years' association with the hospital has just come to an end. A surgeon himself, Mr. Rawling attributed to the surgical staff most of the initiative in expansion. It was in 1910 that the late Mr. C. B. Lockwood recognised that the hospital required reconstruction from top to bottom and was game enough to maintain this unpopular opinion. Sir Holburt Waring had been everywhere and seen everything in order to make the new surgical block the model of what it should be, and one of the wards in this block had been named after him. The opening of this block two months ago had made it possible to house under one roof the previously scattered obstetrical and gynæcological departments. Not content with these changes, Mr. Rawling hinted to the City magnates that they would presently be asked for a new medical block, new accommodation for residential students and paying patients, and new departments for X rays and anatomy. Guests at the dinner were Lord Stanmore, treasurer of the hospital, the President of the Royal College of Physicians, and the medical heads of the three fighting Services. As the senior man present Surgeon-General P. H. Benson was allowed to make the only speech.

Middlesex Hospital.

The annual dinner of past and present students was held at the Savoy Hotel on Oct. 1st. Dr. C. E. Lakin, who presided, said that of the million pounds needed a year ago to complete the new hospital two-thirds had been received. He evidently feared, however, that some of the arrangements would compare unfavourably with those at Cos—whence Hippocrates spread the modern ideas of healing by simple agents like sunlight and fresh air—and he pleaded that a good sun balcony should be provided even at the cost of symmetrical façades. With all the innovations and improvements, he regretted that students could no longer have the benefit of the collegiate life he had himself so much enjoyed. Dr. Lakin referred to Mr. Watson Turner's appointment as consulting dental surgeon, and Mr. S. A. Courtauld (vice-president of the hospital) spoke of the retirement of Prof. Swale Vincent and the impending resignation of Mr. Comyns Berkeley from the active staff. Prof. Vincent had been succeeded in his university chair by Dr. Samson Wright. Dr. T. Izod Bennett referred to signs of a classical revival at the Middlesex, and as an example of politeness told of a child who was asked: "Have you had your bowels open to-day?" and answered "Yes, thank you, doctor. Have you?" This precedent doubtless encouraged Mr. Sampson Handley to mention a sailor who had had 16 piles removed at Middlesex and came back later to boast that he had fought for the honour of the hospital in all the ports of the world. Mr. Handley said that whereas formerly doctors had descended from Harley-street to relieve the necessitous poor they now came to advise their fellow citizens; and soon perhaps the necessitous poor would descend from Harley-street to minister to the élite of democracy. Dr. P. B. Ascroft, as Senior Broderip Scholar, showed a disposition to look gift-horses in the mouth; Mr. R. J. Meller, M.P., maintained that the success of the Middlesex appeal showed that the public still had faith in medicine; Dr. Henry MacCormac proposed the health of the Chairman; and Dr. Lakin closed the formal proceedings with a pleasant story about revenge and the blood of a rat.

St. George's Hospital.

The annual dinner of the medical school was held on Oct. 1st at the Hyde Park Hotel, when more than one hundred past and present St. George's men enjoyed a pleasant evening. The chair was taken by Dr. James Collier, late senior physician to the Hospital, and the chief guests were Lord Riddell, who had delivered the annual oration in the afternoon, Prof. D. M. Blair, dean of the faculty of medical science at King's College, the Provost of University College, Dr. F. N. Kay Menzies, and Capt. the Rt. Hon. C. C. Craig. An excellent dinner was followed by the usual toasts, which called forth a series of witty and interesting speeches. The dean announced that the entries for the coming year were well up to standard as regards both quantity and quality, and he looked forward to a successful year for the medical school.

St. Thomas's Hospital.

Old students of this hospital now have a permanent meeting-place in St. Thomas's House, and their annual dinner on Oct. 3rd was again admirable, both in setting and arrangement. Having entered the hospital 51 years ago the chairman, Dr. R. Muzio Williams, was impressed by the many advantages enjoyed by his successors, ranging from rapid service of meals to departments of pathology. Sir Arthur Stanley (treasurer of the hospital) seemed less perturbed by the horrors of the past than those of the present—notably the fact that he had to inform King Edward's Fund that the hospital wanted £350,000. However, there was a bright side: £100,000 had been unexpectedly received from Lady Houston; Sir William Morris's generous gift would bring in £16,000 a year for two or three years more; only the other day £30,000 was given anonymously; and at last a use had been found for the Triangle purchased for £8000 30 or 40 years ago. It was to be devoted to midget golf. Prof. L. S. Dudgeon, as dean of the medical school, reported that the number of students was now greater than ever before, and their quality was ensured by selection. On the retirement of Dr. A. E. Russell Dr. Harold Gardiner-Hill had joined the honorary staff, and Mr. Pierce Lloyd-Williams had been appointed assistant dental surgeon. Dr. Dudgeon mentioned that Mrs. Caiger had endowed an exhibition at the hospital in memory of the late Dr. Foord Caiger. Mr. Cyril Nitch gave a comprehensive and enlivening account of the guests, and Lord Riddell, in reply, attributed the doubtful reputation of the peerage to families like the Stanleys, whose buccaneering instincts came out in Sir Arthur's astoundingly successful appropriation of money for St. Thomas's. Mr. E. F. White proposed the health of the chairman, and Dr. Williams aptly replied.

University of London.

University College.—Dr. J. C. R. Hindenach and Dr. C. P. Bryan have been appointed demonstrators in the department of anatomy and embryology.—Dr. H. P. Gilding will lecture on the Reticulo-endothelial System at 5 P.M. on Oct. 13th, 20th, and 27th, and Nov. 3rd, and Dr. L. E. Bayliss on the Respiratory Functions of the Blood, at the same hour, on Nov. 10th, 17th, and 24th, and Dec. 1st.

University of Dublin.

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Part I. Therapeutics, Hygiene, Pathology, &c.—*D. S. Torrens, J. N. Concannon, J. R. Counihan, W. J. Craig, P. W. O'Ryan, Edith M. P. Brodrick, C. H. M'Mahon, J. J. Russell, J. W. Craig, P. G. Daly, Francis King, Dorothy R. R. Solomons, and W. T. Bermingham.

* Passed on High Marks.

Royal Dental Hospital, School of Dental Surgery.

The annual dinner of the staff and past and present students of this hospital will be held at 7 P.M. on Saturday, Nov. 22nd, at the Trocadero Restaurant, Shaftesbury-avenue, with Dr. Harvey Hilliard in the chair. The Medical Committee will be At Home to past and present students on the same day from 9.30 A.M. to 5 P.M. In the morning demonstrations will be given by members of the staff and lecturers, and in the afternoon orthodontic and other cases will be shown. Medical practitioners are invited to attend.

Rebuilding of Middlesex Hospital.

Four wall paintings by the late Mr. Cayley-Robinson, which were placed in the entrance hall of the old Middlesex Hospital now being demolished, have been lent to the Tate Gallery pending their re-erection in the new hospital buildings. There are few modern instances of mural decoration more admirably suited to their surroundings than these four panels, which were commissioned by and the gift of Sir Edmund Davis, a well-known connoisseur. They were lent to the memorial exhibition of the artist's work at Burlington House recently, and are good examples of his gifts of sound drawing, delicate colouring, and, above these, his poetic imagination. The first two panels represent a refectory scene with figures of girls in blue uniforms seated and standing, their youthfulness suggesting orphans rather than nurses. The artist has intimated with subtlety the lamplight within and the twilight without. The third panel represents an entrance porch and flight of steps, with figures grouped round, and these might be said to depict the universal ages and types of hospital patients, the inclusion of a blue uniformed soldier commemorating the part played by the Middlesex Hospital in nursing the wounded during the great war. The fourth panel shows in a symbolical fashion the succour of the poor and the weak.

Seamen's Hospital, Greenwich.

Two further beds endowed by the Seamen's Hospital Aid Committee have recently been dedicated, making altogether 12 beds which the hospital owes to the activities of the committee.

Detection of Mustard Gas in Air.

The International Red Cross Committee at Geneva announces that its competition for the discovery of a reagent for the detection of mustard gas in the air is to close on Dec. 31st. The prize offered is 10,000 Swiss francs (£400). The competition is the first step in a Red Cross campaign for the protection of civilians in war-time. It is to be followed, if funds permit, by competitions to discover the best civilian gas-mask and the best means of purifying the air in subterranean shelters. Full particulars of the competition may be obtained on application to the committee, 1, Promenade du Pin, Geneva.

Memorial to Pinel.

The French Ambassador, M. de Fleurian, recently unveiled a memorial of Prof. Philippe Pinel at the Royal Edinburgh Hospital for Mental Diseases. It takes the form of a bronze bust, a replica of that in the Academy of Medicine in Paris, and bears the inscription, "Philippe Pinel, 1745–1825, to commemorate the centenary of his death." It is placed in a niche on the wall near the entrance to the hospital. Many years ago a bust of Pinel was placed over the entrance archway of the hospital, which is now at the back. This was, in fact, the first memorial to him, no statue having been erected until 1885.

New Nursery Schools in London.

Two schools, provided by the London County Council as an experiment, were opened on August 26th in East London, each with accommodation for 150 children, boys and girls, from 2 to 5 years of age. The schools are open on the same days as elementary schools from 8.30 A.M. continuously to about 4 P.M., lunch, dinner, and tea being provided at a charge of 6*d.* a day. Children living within about three-quarters of a mile of the schools may be nominated for admission by the borough medical officer of health, the head teachers of nearby infants' schools, the district organiser of care committees, the divisional education officer, and the divisional medical officer.

London Clinic and Nursing Home.

The first ordinary general meeting of the London Clinic and Nursing Home, Ltd., was held last week, the Duke of Atholl, the chairman, presiding. The accounts show that £105,415 has been expended in the purchase of the site and the erection of the building in Harley-street; two additional leasehold sites, Nos. 147 and 149, Harley-street, have been purchased with the object of securing greater convenience. This purchase will provide 15 additional bedrooms and six more consulting-rooms. There will now be 195 patients' bedrooms and 36 consulting-rooms; the whole of the consulting-rooms have been let to doctors representing the medical group identified with the clinic. The chairman of the medical group, Dr. H. Moreland McCrea, has joined the board. It is hoped to have the building completed by July next, at the latest.

Medical Defence Union.

At the annual general meeting held in London on Oct. 2nd, Sir Herbert Waterhouse, the President, spoke of the continued growth and financial stability of the Union and of the value of membership. Claims against medical practitioners, he said, were increasing in frequency, and with the changing conditions of medical practice were likely to increase still more in the future. The Union could only defend its own members, and they must be in benefit not only when the claim was made but also when the incident occurred out of which the claim arose. In no less than 12 cases where proceedings were threatened against members the case was dropped as soon as it was known that the Union would defend. In six cases where proceedings were threatened the Council was not satisfied that a successful defence was possible, and authorised the solicitor to effect a settlement on reasonable terms. In every case that was heard in the courts the verdict was in favour of the member. Cases of fracture had, as usual, given most anxiety, and this year there had been an unusual number of claims for compensation on account of broken hypodermic needles. Members were greatly assisted in the varied difficulties of their professional work by the wise advice they received daily from the executive officers of the Union. The President concluded by thanking Dr. James Neal and Mr. Oswald Hempson personally for their work as general secretary and solicitor respectively. The report of the Council and the financial statement for 1929 were adopted unanimously, and Dr. W. T. Lydall, Dr. Henry Robinson, and Dr. Seymour Taylor, the retiring members of Council, were re-elected.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 13th.—5 P.M., UNITED SERVICES. Presidential Address: Surgeon-Captain S. F. Dudley, O.B.E. R.N.: Some Psychological Aspects of Specialism and Research in the Services.

TUESDAY.—5 P.M., THERAPEUTICS. GENERAL MEETING OF FELLOWS at 8.30 P.M. Dr. Chevalier Jackson (U.S.A.) will give a lecture on Suppurative Diseases of the Lungs, illustrated by lantern slides.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.). Dr. J. E. M. Wigley: Mycosis Fungoides (with sections). Exfoliative Dermatitis, Associated with Rheumatoid Arthritis. Dr. F. Parkes Weber: Urticaria Pigmentosa in an Adult. Telangiectasia Macularis Eruptiva Perstans, Possibly a Variety of Urticaria Pigmentosa, in an Adult. Dr. H. W. Barber: Lupus Erythematosus and Alopecia Totalis. Other cases will be shown.

FRIDAY.—8 P.M., OBSTETRICS. Short Communication: Vaginal Metastases in Uterine Carcinoma. Paper: Dr. W. H. F. Oxley: The Organisation and Methods of Practice of the East-end Maternity Hospital. 8.30 P.M., ELECTRO-THERAPEUTICS. Presidental Address: Prof. J. M. Woodburn Morison: Radiology—Its Progress and Future.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 13th.—8 P.M., Annual General Meeting. 8.30 P.M., Dr. R. A. Young: Presidential Address on The Stethoscope: Past and Present.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 16th.—8.30 P.M., A Clinical Meeting will be held at the Hammersmith Hospital, Ducane-road, W.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 14th.—4 P.M. (in the rooms of the Medical Society of London, 11, Chandos-street, W.), Dr. Macdonald Critchley: Some Forms of Drug Addiction.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 14th.—9 P.M., in the Great Western Hotel, Dr. W. G. Bendle: Local Hospital Topics of Interest to the General Practitioner.

SOCIETY OF RADIOGRAPHERS.

WEDNESDAY, Oct. 15th.—7 P.M. (in the Reid-Knox Hall, 32, Welbeck-street, W.), Presidential Address by Mr. Cyrus L. Winch. An Address by Mr. E. C. Jerman, (President Emeritus of the American Society of Radiographers).

THURSDAY.—8.30 P.M., Dr. J. F. Bromley: The Use of Negative Paper (with demonstration). Capt. A. R. Wood: Ultra-violet Glasses (with demonstration). Dr. G. Simon: The Use and Technique of Diathermy in the Treatment of Pneumonia.

FRIDAY.—2 P.M.–4 P.M., Visits to the Radiological Department of St. Mary's Hospital, Paddington.

ROYAL MICROSCOPICAL SOCIETY.

WEDNESDAY, Oct. 15th.—(In the Hastings Hall, B.M.A. House, Tavistock-square, W.C.), 5 P.M., The President and Mrs. R. Ruggles Gates will hold an informal Reception. 5.30 P.M., Mr. J. E. Barnard, F.R.S.: Histological Preparations. 6 P.M., Dr. G. M. Findlay: Recent Research on Malarial Parasites.

ROYAL SOCIETY OF TROPICAL MEDICINE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 16th.—7.45 P.M., Demonstration. 8.15 P.M., Dr. Frank Marsh: Ætiology of Heat Stroke and Sun Traumatism.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

SATURDAY, Oct. 18th.—4 P.M., Prof. J. B. Leathes, F.R.S.: Harveian Oration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 13th, to SATURDAY, Oct. 18th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W., Special M.R.C.P. Lectures: Mon. at 5 P.M., Mr. C. L. Gimblett, General Medical Ophthalmology (Illustrated by Epidiascope). Tues. at 8.30 P.M., Dr. L. S. T. Burrell, Intrathoracic Tumours.—On Mon., Oct. 13th, at 5 P.M., there will be a free lecture by Dr. G. E. Beaumont on Recent Advances in the Medical Treatment of Some Pulmonary Emergencies.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C., Intensive Clinical Course.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Two weeks course.—TROPICAL HOSPITAL, Gordon-street, W. Second week of course.—MILLER GENERAL HOSPITAL, Greenwich, S.E. Mon., 3.30 P.M., Dr. Harold Pritchard: Clinical Cases illustrating Modern Methods of Diagnosis and Treatment. No fee.—KING'S COLLEGE HOSPITAL, Denmark Hill, S.E. Tues., 2 P.M., Mr. C. P. G. Wakeley: Clinical Demonstration Out-patient Department (General). No fee.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 13th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical Dental Department). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 13th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON HOSPITAL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 15th.—10.15 A.M., Dr. Donald Hunter: Vitamins. 11 A.M., Dr. W. J. O'Donovan: Major Skin Affections of Childhood. 12 noon, Mr. Hugh Lett: Enlarged Prostate. 1.30 P.M., Mr. Hugh Cairns: Treatment of Trigeminal Neuralgia. 2–3 P.M., Mr. W. S. Perrin: Demonstrations of Cases treated by Radium. 2–4 P.M., Mr. E. C. Lindsay: Surgical Operations. 2–3.30 P.M., Dr. John Parkinson: Ward Demonstration. 3.45 P.M., Dr. George Riddoch: Diagnosis and Treatment of Parkinsonism.

THURSDAY.—10 A.M., Dr. A. Maitland-Jones: Some Nutritional Disorders in Infants. 11 A.M., Mr. C. B. Goulden: Injuries of the Eye. 12 noon, Mr. Eardley Holland: Some Common Obstetrical Problems. 1.30 P.M., Dr. Russell Brain: Some Causes of Pain in the Leg. 2–3.30 P.M., Dr. R. A. Rowlands: Ward Demonstration. 2–4 P.M., Mr. H. S. Souttar: Surgical Operations. 2–3.30 P.M., Mr. Victor Lack: Ante-Natal Clinic. 3.45 P.M., Dr. O. Leyton: Diabetes.

FRIDAY.—10 A.M., Dr. T. Lumsden: Immunity in Relation to Malignant Disease. 10.30 A.M., Mr. Alan Perry: Infections of the Hand. 11 A.M., Mr. Norman Patterson: Demonstration of Cases and Specimens. 12 noon, Mr. G. E. Neligan: Cystitis. 1.30 P.M., Dr. A. E. Clark-Kennedy: Dyspepsia (Ward Demonstration). 1.30–3.30 P.M., Mr. A. J. Walton: Surgical Operations. 2.30 P.M., Dr. Theodore Thompson: Ward Demonstration. 4.15 P.M., Mr. H. S. Souttar: Radium in the Service of Surgery (Schorstein Memorial Lecture). 9 P.M., Dr. Ashley Daly: Methods of Anæsthesia (Demonstration, if requested.)

SATURDAY.—10 A.M., Dr. G. Vilvandré: Some Pitfalls in X Ray Diagnosis. 11 A.M., Mr. Russell Howard: Ward Demonstration. 12 noon, Mr. A. J. Walton: Present State of Thyroid Surgery.

KING'S COLLEGE, Strand, W.C.

WEDNESDAY, Oct. 15th.—5.30 P.M., Sir Humphry Rolleston: Medicine as a Career. (Public lecture.)

THURSDAY.—5 P.M., Mr. J. A. Hewitt, Ph.D., D.Sc.: Metabolism of the Carbohydrates and Fats (first of four free lectures).

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 13th.—5 P.M., Dr. H. P. Gilding: The Reticulo-endothelial System (first of four free lectures).

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 13th.—12 noon, Dr. Greenfield: Pathology of the Nerve Fibre. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disseminated Sclerosis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: Migraine.

WEDNESDAY.—2 P.M., Dr. Purdon Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Alzheimer's Disease.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 15th.—4.30 P.M., Mr. R. H. Jocelyn Swan: Cancer of the Bladder.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 15th.—4 P.M., Dr. E. Graham Little: Prevention of Accidents. Disorders and Disease in Members of the Medical and Nursing Professions.

THURSDAY.—4 P.M., Dr. C. Killick Millard: Contraception and the Medical Officer of Health.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 14th.—4.15 P.M., Mr. C. Roberts: Early Diagnosis of Gastro-intestinal Cancer.

FRIDAY.—4.15 P.M., Dr. R. E. Lane: Diagnosis and Treatment of Plumbism with Special Reference to Recent Work.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 16th.—11 A.M., Dr. N. Kletz: Clinical Demonstration. 4.15 P.M., Dr. W. J. S. Reid: Disorders of the Autonomic Nervous System.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Hospital for Sick Children.—H.P.

Aberdeen Royal Mental Hospital.—Jun. Asst. Phys. £250.

Bath, Royal Mineral Water Hospital.—Two Hon. Phys.

Battersea Metropolitan Borough.—Part-time Asst. Tub. Officer. £400.

Bedford County Hospital.—H.S. At rate of £175.

Birmingham, Ear and Throat Hospital, Edmund-street.—Res. H.S. At rate of £150.

Birmingham General Hospital.—Res. Anæsthetist. £120. Also Res. H.P. and H.S. Each £70.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110. Also Asst. S.

Birmingham, Selly Oak Hospital.—Part-time Radiologist. Also Part-time Dental Surgeon.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bradford, Grassington Sanatorium.—H.P. £225.

Brighton, Lady Chichester Hospital for Early Nervous Breakdowns. H.P. Also Jun. H.P. At rate of £100 and £50 respectively.

Brighton, New Sussex Hospital for Women and Children.—H.P. and H.S. Each £50.

Bristol Royal Infirmary, Cancer Research Dept.—Asst. to Pathological Laboratory. £400.

Burnley County Borough.—M.O.H. £1100.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Bury Infirmary, Lancashire.—Third H.S. At rate of £150.

Cairo, Egyptian Government Public Health Department.—Deputy Director. £E. 1140–1390. Also First Bacteriologist £E.960–1200.

Cheadle, Cheshire, Barnes Convalescent Hospital.—Res. M.O. £250.

Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.

Colchester, Essex County Hospital.—Asst. H.S. and Registrar. £120.

Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100.

Croydon County Borough.—Asst. M.O., &c. £600.

Derby County Borough.—Asst. School M.O.

Derby, Derbyshire Royal Infirmary.—H.P. £150.

Doncaster Royal Infirmary.—Jun. H.S. At rate of £175.

Dreadnought Hospital, Greenwich.—Asst. Radiologist. 50 gns. Also Physician to Out-patients.

Dumfries, Lochmaben Sanatorium and Infectious Diseases Hospital.—Asst. Med. Supt. £300.

Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200.

Exeter, Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £150.

Gloucester, County and City Mental Hospitals.—Laboratory Asst. £260. Also Jun. Asst. M.O. £350.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution. Res. Surg. O. Also Second H.S. At rate of £175 and £120 respectively.

Godalming, Surrey, King George V. Sanatorium.—Jun. Asst. M.O. £500.

***Great Yarmouth General Hospital.*—Jun. H.S. At rate of £140.**

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hertford County Hospital.—Hon. Anæsthetist.

Infants Hospital, Vincent-square, Westminster.—Clin. Asst. to Out-patient Dept.

Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Gynæcologist.

Kidderminster and District General Hospital.—H.S. £150.

Leicester City General Hospital.—Res. M.O. £300.

Liverpool Hahnemann Hospital, Hope-street.—H.S. At rate of £100.

Macclesfield General Infirmary.—Sen. H.S. At rate of £180.

Manchester Royal Infirmary.—Res. Surg. Registrar to Out-patients. At rate of £150. Also Surgical Officer to Out-Patients. £35.

Manchester, St. Mary's Hospitals.—Two H.S.'s. for Whitworth-street West Branch. Also two for Whitworth Park Hospital. Each at rate of £50.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £150.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and S. Jun. H.P. and S., and Two Cas. O.'s. All at rate of £100. Also a Phys. and Surg.

Middlesbrough County Borough.—Two Asst. M.O.'s. Each £500.

Milford, Surrey, County Sanatorium.—Second Asst. M.O. £400.

***Ministry of Health.*—Deputy Regional M.O. in connexion with National Health Insurance Medical Service. £800.**

Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100. Res. Sen. H.S. Also Res. H.P. Each at rate of £95.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. Surgeon to the Throat and Ear Department.

Newport Mental Hospital, Caerleon, Mon.—Asst. M.O. £400.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

***Oldham Royal Infirmary.*—Two H.S.'s. Each at rate of £175.**

Portsmouth, Royal Portsmouth Hospital.—3rd H.S. At rate of £130.

Preston County Borough.—Asst. School M.O. £600.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. Surg.

Princess Louise Kensington Hospital for Children, St. Quintin avenue, North Kensington, W.—H.P. At rate of £75. Also Hon. Asst. Dental S.

Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200.

Radium Institute, Riding House-street, W.—Clin. Asst. At rate of £300.

Reading, Blagrave Branch Hospital, Calcot.—H.S. At rate of £150.

Richmond, Surrey, &c., Joint Isolation Hospital Committee, Hospital, Mogden.—Res. M.O. £350.

Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £150.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Three Surg. Registrars. Each £105.

St. John's Hospital, Lewisham.—H.P., H.S., and Cas. O. Each at rate of £100.

St. Marylebone General Dispensary, 30, Marylebone-lane.—Hon. Phys. in Charge of School-children Consultation Clinic.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O. £400.

St. Pancras Dispensary, 39, Oakley-square, N.W.—Res. M.O. £200.

Salford Royal Hospital.—Res. H.S. to Orthopædic Dept. At rate of £125.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

***Sheffield Royal Hospital.*—H.S. Also Ophth. H.S. Each at rate of £80.**

Shrewsbury, Royal Salop Infirmary.—Res H.P. At rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. At rate of £180.

South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £100.

Southern Rhodesia Medical Service.—Two Asst. and Relieving Govt. M.O.'s. Each £500.

Staffordshire Mental Hospital, Cheddleton, nr. Leek.—Asst. M.O. £600.

Stockport Infirmary.—H.P. £175.

Stoke-on-Trent, City of.—Tuberculosis Officer. £750.

Sutton, Surrey, Downs Hospital for Children.—Jun. Asst. M.O. £500.

Swansea Hospital.—H.S. to Ear, Nose, Throat, &c. Depts. At rate of £200.

Wallasey, Victoria Central Hospital.—Hon. Gynæcologist.

Walsall, Manor Hospital.—First Asst. Res. M.O. At rate of £200.

West Bromwich and District General Hospital.—H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Hon. Ophth. S.

Wolverhampton Royal Hospital.—H.S. At rate of £150.

***Woolwich and District War Memorial Hospital, Shooters Hill, S.E.*—Res. M.O. £175. Also H.S. At rate of £100.**

Workmen's Compensation Act, 1925.—Member of the Medical Board for Silicosis. £750.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Stonehaven (Kincardineshire).

Births, Marriages, and Deaths

BIRTHS.

ALEXANDER.—On Oct. 2nd, the wife of Major R. H. Alexander, *M.C.*, R.A.M.C., of the British Legation Guard, Peking, N. China, of a son.

BROWN.—On Sept. 29th, at "Moorfield," Lee-on-Solent, the wife of Major P. E. Barry Brown, Army Dental Corps, of a daughter.

MURRAY.—On August 29th, at Cairo, the wife of D. H. Murray, Major, R.A.M.C., of a daughter.

STEWART.—On Sept. 26th, at Green Mount, Batley, Yorkshire, the wife of Dr. Alan Stewart, of a daughter.

WILKINSON.—On Sept. 26th, at Wilbraham-place, the wife of Dr. M. C. Wilkinson, of a son.

MARRIAGES.

KENNEDY—CHILLCOTT.—On Oct. 4th, at Holy Trinity, Brompton, Lt.-Col. Robert S. Kennedy, D.S.O., *M.C.* (late I.M.S.), to Daphne Evelyn, only daughter of Mr. and Mrs. R. H. Chillcott, of "Huntspill," Weybridge.

MARTIN-LEAKE—CARROLL.—On Oct 1st, at Christ Church, Westminster, Lieut.-Colonel Arthur Martin-Leake, V.C., F.R.C.S., late R.A.M.C., Chief Medical Officer of the Bengal-Nagpur Railway, to Winifred Frances, widow of C. W. A. Carroll, Agent of the Bengal-Nagpur Railway.

MURPHY—AUSTIN.—On Sept. 30th, in London, Douglas Power Murphy, M.D., Philadelphia, to Grace Lily Austin, M.D.

DEATHS.

MANNING.—On Oct. 3rd, suddenly, at Middleton, Combe Martin, Nathaniel Samuel Manning, O.B.E., T.D., F.R.C.S.I.

WILLEY.—On Oct. 1st, at Farringford, Queen's Park West-drive, Bournemouth, Thomas Willey, M.D., aged 84.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

HEALTH OF THE ROYAL AIR FORCE.

THE report[1] on the health of the Royal Air Force during the year 1929 is signed by Air-Commodore J. McIntyre, director of medical services, and contains within its 64 pages an immense amount of exact information on the causes of sickness, death, and invaliding in the service, on the physical efficiency of officers, and on the medical examination of candidates for commissions.

Incidence of Sickness.

In the force as a whole, the total sickness incidence rose from 701·4 per 1000 in 1928 to 737·2 per 1000 in 1929, but the latter figure compares favourably with average incidences of 808·5 and 1119·4 respectively for the earlier four-year periods of 1925–28 and 1921–24. This increase in incidence was due to the home figures, for which a rise in the number of cases of influenza (1302 in 1929 compared with 292 in 1928) was mainly responsible. There was, however, a slight reduction in the average number of days' sickness per head of the force. The invaliding-rate from abroad rose to 18·4 in 1929 from 17·0 per 1000 in 1928, the rise being largely due to cases of the enteric group invalided from Iraq; the corresponding average figures for the earlier periods were 21·8 and 22·4 respectively. The final invaliding-rate rose from 6·2 per 1000 in 1928 to 7·6 per 1000 in 1929. Psychoneurosis and tuberculosis again headed the list of causes of final invalidings, the former showing a decrease and the latter an increase in actual numbers compared with 1928. The death-rate fell from 4·5 in 1928 and an average of 4·4 in each of the two earlier periods to 3·4 in 1929.

There were fewer deaths from flying accidents during 1929 than in any one year since 1921, and more aircraft hours were flown per accident resulting in death or injury than in any previous year; 28 per cent. of all flying casualties resulted in death compared with 41 per cent. in 1928 and 39 per cent. in 1927. There was a decrease in motor and workshop accidents in 1929 but a slight rise in injuries sustained in athletics; 60 per cent. of all accidents occurred on duty.

ANALYSIS BY AGE AND TRADE.

The tendency appears to be, for sickness, whether disease or injury, to decrease in the higher age-groups. Among the various types of unit the incidence of sickness is lowest among flying units, while on analysis by trades the group of aircraft apprentices, which is the lowest age-group, shows the highest incidence. A point worthy of notice in this latter analysis is that in the only named group of diseases where the disability is the result of voluntary risk—viz., venereal disease—the same groups (excluding aircraft apprentices under 18) i.e., drivers, and officers, cadets, and airman pilots, have shown the highest and lowest incidences respectively for the last five years, with the exception of 1926 when the highest group—drivers—dropped to second place; and there has been a remarkable constancy in the placing of the remaining groups during the whole of the period. There were 29 cases of pulmonary tuberculosis in 1929 compared with 24 in 1928; 25 of these cases gave a definite family history of phthisis, and 23 had personal histories of such likely precursors as chronic cough, upper air passage infections, pleurisy, and pneumonia. Four out of 14 cases who had served abroad had suffered from tropical diseases; and as regards their service occupations, two were in motor-boat crews, where they were liable to repeated wettings, two worked in blacksmiths' shops, and one had been employed for ten years in photographic dark rooms. The latter case was of further interest in that two of his immediate predecessors had developed phthisis and a pupil working contemporaneously with him was also invalided from the service with the same disability.

VARIOUS DISEASES.

The incidence of venereal disease has fallen in 1929 to 15 per 1000—a very satisfactory figure, continuing a steady tendency to a decrease which has been maintained since 1921. The incidence of total sickness at home—i.e., cases admitted to hospital and cases of less than 48 hours' duration—fell to 626·1 in 1929 from averages of 634·6 and 857·5 per 1000 respectively during the two earlier periods. There was an increase, however, in the number of cases admitted to hospital, giving an incidence of 411·7 per 1000 compared with previous averages of 364·1 and 378·6, and this rise was mainly due, as has already been noted, to an increase in the admission rates for influenza and tonsillitis—57·4 and 42·0 per 1000 respectively in 1929 compared with 13·1 and 26·6 in 1928.

In the age-groups at home, infections of the upper air passages and digestive troubles continue to pick out the youngest age-group (under 18). Acute rheumatism among boys at Halton showed a slight increase compared with 1928, the figures being 46 and 34 respectively. In 1929 five cases developed definite cardiac lesions, while in a further five there was evidence of a temporary cardiac involvement. The corresponding figures in 1928 were 3 and 12.

Abroad, both the admission to hospital rate and the total incidence of medical non-effectiveness fell in 1929, the respective incidences being 604·0 and 1042·6 in 1929 compared with 640·0 and 1161·8 in 1928. The incidence of dysentery showed a satisfactory decrease in all commands, and that of primary malaria a decrease during the last five years in Iraq and the Mediterranean Littoral, which comprises Malta, Egypt, Palestine and drafts en route to and from the United Kingdom, and a steady figure throughout in India. A similar number (48) of cases of the enteric group of diseases was notified in 1929 to that in 1928, and there were four deaths—three from typhoid fever and one from clinical enteric. There were six cases of sickness due to the effects of heat compared with 27 in 1928 and no deaths. Ten cases were invalided home from abroad for psychoneurosis compared with 17 in 1928 and 30 in 1927.

Selection of Candidates.

At the Central Medical Establishment 58 per cent. of candidates for commissions were accepted, compared with 64 per cent. in 1928, and among the rejected defective vision was the most frequent cause of rejection, while an analysis of the physical efficiency tests which these candidates undergo was made by ages, and the figures bear out the practical experience that physical efficiency does not vary much between the ages of 16 and 28.

In investigating the effects of high-speed flying, the results obtained showed that no special methods beyond the ordinary routine examination were required in the selection of suitable pilots. The chief effect of steep banking at high speed, known as blacking-out, appears to be due to the withdrawal of blood from the eye itself, and while not incapacitating the pilot to a degree where he cannot manage his machine, should be regarded as a warning not to increase these effects by turning further.

Considerable use has been made of the electrocardiograph and orthodiagraph in assessing cardiovascular efficiency, and data is being steadily accumulated showing the nature of the variations of the normal electrocardiogram and the relative size of the heart associated with physical efficiency.

Of the officers of the general duties branch and airman pilots who are liable for full flying duties, 89 per cent. were found fit for full duties at their annual examination, and of 341 officers who on account of their rank and age are not liable to full flying duties,

[1] M. Stationery Office. 1s. 3d.

151 were, nevertheless, found medically fit for full duties at home or abroad. On the whole, officer pilots show a slightly better figure in their physical efficiency tests than the airman pilots.

In the recruiting of airmen, 40 per cent. of candidates were accepted as of the required medical standard, compared with 53 per cent. in 1928, and as in previous years loss or decay of many teeth was the most frequent cause of rejection.

In the reserve of officers, 68 per cent. of candidates for this service were accepted in 1929, and the standard of physical fitness of those serving, estimated by the same standards as obtain for the regular officer, was found to be good, 78 per cent. of those examined being considered average or above.

Transport of casualties to hospital by air continue in those countries such as Iraq and Palestine where this method, by reason of local conditions, is frequently the only one possible, and during the year 65 patients were evacuated by this means.

INSTRUCTION ABOUT DIET.

To the Editor of THE LANCET.

SIR,—While gratefully acknowledging the appreciative reference in your annotation (1930, i., 1358) to the paper read at this year's Conference of Educational Associations and now issued as a pamphlet entitled "Children's Diet," there are points which it seems desirable to clear up. The condemnation was not of milk but of milk puddings. The remarks as to meat were applied to children of tender years. Prof. Langmead has drawn attention to the irritating effect of the cellulose in bananas upon the digestive organs of children.

I am, Sir, yours faithfully,

CHAS. E. HECHT,
Hon. Sec., Food Education Society.

Gordon-square, W.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

THAT this society should choose Manchester as the place of its second annual dinner was a well-deserved compliment to the city. At the time when the Society of Trained Masseuses was holding examinations with a view to raising the standard of education amongst those practising massage in London, the Institute of Remedial Gymnastics was doing the same good work in Manchester. It became obvious that these two institutions should not be competing one against the other, so they combined to form the Chartered Society of Massage and Medical Gymnastics, and Miss Sparsholt, who was largely responsible for the Manchester Institute, became a member of the Council of the newly formed society, which now has 7800 members.

The dinner was held at the Midland Hotel, and the guests were received by Mr. R. C. Elmslie. The toast of "The Society" was proposed by Dr. John Coward, who said he had come into contact with its work during the war, when a corps was formed for treatment by massage and medical gymnastics. This corps had adopted as a badge a wheel with wings attached, all of which suggested progress, and though it had been terribly overworked, it had done its work willingly and well. It was of inestimable value to the profession to be able to secure the services of well-qualified practitioners in massage and medical gymnastics, who only worked under doctors' orders. In responding, Mr. Elmslie, who congratulated Miss Sparsholt (who was present), thanked the lecturers, the hospitals, and the medical school of Manchester for the help they had given to make the gathering successful. He illustrated the importance of thorough training in the physical treatment of disease by telling how members of the resident staff of his own hospital had given themselves severe dermatitis by playing with ultra-violet rays. Though the society had gone ahead at a great pace, much still remained to be done. Dr. J. B. Mennell, proposing "The Guests," promised to be short, and quoted an eminent divine who was asked how long a sermon should be, and answered, "No soul was ever saved after 20 minutes, and many souls have been lost after ten." Prof. E. D. Telford, replying, spoke of the society's good work, and hoped that its members would educate the medical profession to appreciate the help they were able to give.

A DENTAL APPOINTMENT BOOK.

THE Dental Manufacturing Company, Ltd. (Brock House, Great Portland-street, London, W.1.), has sent us a copy of a diary of appointments for 1931, which is described, with some justice, as an aristocrat among diaries. Besides ample space for entering appointments throughout the year, it contains a list of the fees and regulations for dental benefit under National Insurance, details of the Public Dental Service Association of Great Britain, and a number of useful tables. Bound in imitation morocco, with rounded corners, pencil and address book, the price is 6*s.* 6*d.* It can be obtained direct or through any dealer.

ROYAL MEDICAL BENEVOLENT FUND.

AT a recent meeting of the committee 36 grants were made amounting to £655. The following are particulars of a few cases helped.

M.B., aged 36, with three children aged 5, 3, and 1. Applicant is a general practitioner who put up his plate some 18 months ago, and two months ago developed rheumatic fever. He is now in hospital. He has no reserves and is therefore falling into debt, having his wife and family to maintain and a locum tenent to pay. Voted £20. Further help is being sought from another charity. The case will be reconsidered in three months' time.

Daughter, aged 46, of M.B. Her father, who died at the age of 80 this year, worked hard in a poor-class practice for over 50 years. For about four or five years before his death he was an invalid, and for over a year was bedridden. Since his death the applicant has had practically no money at all. Voted £20. It is hoped that she will soon be able to find employment for which she is trained.

Daughter, aged 65, of M.D. At the death of her father in 1894 she was left unprovided for and untrained. She became a housekeeper at a girls' school. A supporter of the case writes that "she lived for the school. Last time I saw her she was looking very frail and was still everyone's slave. I cannot conceive of anyone more deserving and probably more needing help in her later years now that she has broken down in health and is unable to work." Present income £52 a year. Voted £26.

Widow, aged 62, of M.R.C.S. Husband was in receipt of an annuity from the Fund because he had broken down in health; he also had a pension of £51 a year. On his death both annuity and pension ceased. The widow's sole support is her daughter who is earning 52*s.* a week. Voted £26. Help will be sought from other charities.

Widow, aged 70, of M.B. Since the death of her husband in 1897 she has worked as a nurse companion. She is not fit to do much now except look after herself. Present income £56. Voted £26.

Subscriptions and donations should be forwarded to the hon. treasurer of the Fund at 11, Chandos-street, Cavendish-square, London, W. 1.

Appointments

FLEMING, G. B., M.D., B.Chir. Camb., has been appointed to the Samson Gemmell Chair of Medical Pædiatrics in connexion with the Royal Hospital for Sick Children, Glasgow.

FLEMING, G. W., L.R.C.P., L.R.C.S. Ed., D.P.H., Medical Officer of Health and School Medical Officer for Gosport.

FRASER, A., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health for the Stewartry of Kircudbright.

GOUGH, W., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Gynæcologist, Leeds General Infirmary.

MACKENZIE, M.B., Ch.B. Aberd., Medical Officer of Walls, Zetland.

Edinburgh Royal Maternity and Simpson Memorial Hospital: YOUNG, J., M.D., F.R.C.S. Ed., and MILLER, D., M.D., F.R.C.S. Ed., Physicians; HAULTAIN, W. E. T., M.B., B.Chir. Camb., F.R.C.S. Ed., and KENNEDY, C. D., M.B., Ch.B. Ed., F.R.C.S. Ed., Asst. Physicians; MCLAREN, M. B., M.B., Ch.B. Ed., Senr. Lady Resident, and JAMIESON, E., M.B., Ch.B. Glasg., Junior Lady Resident.

Certifying Surgeons under the Factory and Workshop Acts: HABGOOD, G., M.B., B.Chir. Camb. (Totton, County of Southampton); KELLY, W., M.B., Ch.B. Aberd. (Basingstoke).